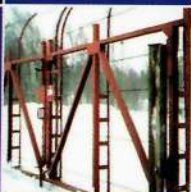


# GUIDEBOOK



## GLOBAL PARTNERSHIP

AGAINST THE SPREAD OF WEAPONS  
OF MASS DESTRUCTION

Moscow 2006

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# GUIDEBOOK

## GLOBAL PARTNERSHIP

AGAINST THE SPREAD OF WEAPONS  
OF MASS DESTRUCTION



MOSCOW  
HUMAN RIGHTS PUBLISHERS  
2006



**Editor-in-Chief:**

Dr. Vladimir Orlov

**Editor-Authors:**

Alexander Bulychyev, Cristina Chuen, Anton Khlopkov, and Daniil Kobayakov

**Additional Contributors:**

Anna Abaeva, Andrei Frolov, Gen. Vasily Lata, Dr. Vladimir Orlov, Roman Popov, Anna Shuvalova, and Natalia Yurchenko

**Reviewers:**Dr. Sergei Antipov, Amb. Anatoly Antonov,  
and Dr. Natalia Kalinina**Global Partnership Against the Spread of Weapons of Mass Destruction: A Guidebook.**

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The first major Russian publication on the Global Partnership Against the Spread of Weapons of Mass Destruction, the guidebook presents the history, current progress, and future prospects of the G8 program initiated at the 2002 Summit in Kananaskis in a succinct and accessible format. The guidebook is designed for experts directly or indirectly involved in the implementation, analysis, and evaluation of Global Partnership programs, including diplomats, Russian and foreign government officials, businessmen, nongovernmental experts, and journalists.

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## FOREWORD

*Dear Reader,*

This publication was created to provide a thorough examination of the Global Partnership and all associated cooperative treaty reduction programs. It is also the first major Russian publication on nonproliferation assistance to that country. While explicating Russian views, it also examines the programs from a more global perspective.

Issues of international security and preventing the spread of weapons of mass destruction (WMD), including the Global Partnership initiative itself, continue to be of critical importance in global politics today. It is in the interest of all of the countries in the world to find a successful solution to these problems; indeed, their national security depends upon it. The Global Partnership is particularly relevant in Russia, where the bulk of the cooperative projects under its auspices are being realized.

The close attention world leaders are paying to nonproliferation questions is no accident. The events of September 11, 2001, showed that the threat of catastrophic terrorism, including an attack involving the use of WMD, is not a myth, but a reality. When the global community realized this, it sought new cooperative means to counteract the threat. This was part of the reasons why the Global Partnership was established. Another reasons behind this initiative were necessity to tackle huge environmental problems caused by the "Cold War legacy" and necessity to strengthen nonproliferation regimes by ensuring the Newly Independent States compliance with nonproliferation and arms reduction treaties. However one may note that the actions undertaken to date sometimes do not yet correspond to the scale of the problems.

A detailed and critical analysis of the various facets of the Global Partnership is very much needed. It can help identify more effective means to implement the initiative, to help avoid duplication of effort, and to concentrate on the truly most important cooperative projects.

To get help answering this and a number of other critical questions, we can turn to the results of an international conference on the Global Partnership held under the aegis of the PIR Center for Policy

Studies in Russia and the Board for Sustainable Partnership for Russia (SUPR) in late April 2004. More than 260 experts, officials, and businessmen from 21 countries participated in the conference. The conference participants were polled on a number of vital questions related to the realization of the Global Partnership. The results of this poll revealed a number of interesting and significant views.

Thus, 68% of those questioned believe that the Evian resolutions have not been fulfilled and that there has not been "substantial progress" in implementing the Global Partnership. 82% noted that there is "a significant gap between pledges made and money received by Russia for new Global Partnership projects." 71% of the respondents answered that there has yet to be a change in donor countries' approach to Russia, changing their relationship "from patronage to true partnership." 86% agreed with the assertion that Russia and other Global Partnership donor states should monitor expenditures more critically and strengthen auditing, trace the effectiveness of expenditures, and begin to employ independent reviews of new projects. 79% of those questioned believe that it is time for large Russian companies to start funding socially oriented projects under the Global Partnership. Unfortunately, the results of a similar poll, if given today, are likely to be largely similar.

The importance of broader coverage of Global Partnership activities was acknowledged in the documents adopted at the Sea Island Summit. Thus, the G8 Senior Group's "G8 Global Partnership Annual Report" states that "G8 members agree that it is important to explain to the general public and parliaments concrete results achieved with Global Partnership funding and highlight the benefits in terms of enhanced security."

The coverage of the Global Partnership in this guidebook, I trust, will prove to be of undoubted interest to the broad circle of experts directly or indirectly involved in the implementation, analysis, and evaluation of these programs, including diplomats, Russian and foreign government officials, businesspeople, non-governmental experts, and journalists.



Unfortunately, the problems being tackled by the Global Partnership are extremely complex, and are not easy for even a specialist to understand fully. The purpose of this publication is to provide a guide through the labyrinths of the program. The distinctive features of the guidebook are its convenient size, brevity, and the accessibility of the information contained, in order to make it easy for the reader to grasp the complex problems it examines.

The guidebook contains the latest data on the Global Partnership, as far as it is possible to include it in a publication of this size. Nevertheless, one should note that implementation of the Global Partnership is a dynamic process, which is constantly changing. For example, during the preparation of the English version of the guidebook a

number of appointments took place both in Russian and in foreign governments that impacted on implementation of the partnership; in addition, a number of new projects were launched during this time. We have tried to reflect all of the changes that have recently occurred as far as we were able.

I am confident that even experienced experts will find that the guidebook is an invaluable source of information on and analysis of Global Partnership projects. In addition, it will be a guide to the methods for developing cooperative international programs in such a sensitive area as international security.

*Editor-in-Chief Dr. Vladimir Orlov,  
PIR Center Director*

## INTRODUCTION

On June 27, 2002, the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction was initiated at the Kananaskis, Canada, Summit of the Group of Eight. The G8 promised to raise up to \$20 billion over the course of ten years for cooperative projects, primarily in Russia, aimed at nonproliferation, disarmament, nuclear safety, and the fight against terrorism.

Under the program, also known as the "10 plus 10 over 10 initiative," the United States pledged to provide half of the promised sum; the other \$10 billion were to be contributed by the other G8 countries, including Russia itself, along with additional countries that wish to join the initiative.

In 2003, at the G8 Summit in Evian, France, six new countries joined the Global Partnership — Finland, the Netherlands, Norway, Poland, Sweden, and Switzerland. In 2004, during the G8 Summit at Sea Island, in the United States, the circle of donor countries widened yet again — thanks to Australia, Belgium, the Czech Republic, Denmark, Ireland, New Zealand, and the Republic of Korea. The expansion process is likely to continue into the future, and include new recipient nations as well — primarily former Soviet republics. Late in 2004, Ukraine joined the Global Partnership as the first additional recipient partner, after Russia.

The current guidebook is aimed first and foremost at those involved in the implementation of WMD reduction programs in Russia — diplomats, government officials on both national and regional levels, political, scientific and business circles and experts, as well as journalists who write about WMD problems. The goal of this guidebook is to give a full picture of the Global Partnership program and its key participants, as well as related legal issues, in an intuitive and accessible form.

*The Global Partnership Guidebook:*

- reviews the history of cooperative programs in Russia aimed at the reduction and elimination of WMD, equipment, and materials used for the production of such weapons;
- surveys the areas of cooperation, including nuclear submarine dismantlement, chemical weapons destruction, the redirection of former

weapons scientists, and the safe and secure storage and disposition of nuclear materials;

- examines the main problems facing cooperation (taxation issues, liability for nuclear and civil damage, access to Russian military and other facilities), as well as the current state of cooperation under the Global Partnership;
- provides a survey of the partners by country, reviewing the projects in which each is involved; and
- analyzes the prospects for the program in the near future.

The guidebook also includes three appendices: a glossary, a list of the key documents that underpin cooperation under the Global Partnership, a list of relevant abbreviations. The glossary brings together the key terms and concepts used in the guidebook in one place and provides short explanations of each. The list of documents includes both multilateral and bilateral agreements that form the legislative basis for Global Partnership cooperation. The full text of most of these documents is available on the PIR Center website <http://www.pir-center.org>

The *Global Partnership Guidebook* was originally published in Russian in the spring of 2005. It was translated and updated in August 2005; data provided in the guidebook are therefore current as of September 1, 2005, unless otherwise noted.

The titles of officials cited or mentioned in the text are the titles that the official held when the statement was made or the cited materials was originally published. Where possible, current titles have also been included.

The *Global Partnership Guidebook's* editor-in-chief is Dr. Vladimir Orlov, director of the Center for Policy Studies in Russia (PIR Center) and course co-director of the European Training Course in Security Policy at the Geneva Centre for Security Policy. He holds a doctorate in political science.

The editor-authors of the initial, Russian version of the guidebook were: **Daniil Kobayakov**, who was a research associate at the PIR Center until 2005 and



coordinated the Global Partnership research project, and **Anton Khlopov**, deputy director of the PIR Center. The editor-authors of the new English edition are: **Alexander Bulychev**, PIR Center research associate and current coordinator of the PIR Center Global Partnership research project, and **Cristina Chuen**, a senior research associate at the Center for Nonproliferation Studies, Monterey Institute of International Studies.

The authors who contributed material for this guidebook are: **Anna Abaeva**, Nizhny Novgorod State University expert; **Alexander Bulychev**, PIR Center research associate; **Cristina Chuen**, Center for Nonproliferation Studies, Monterey Institute of International Studies senior research associate; **Andrei Frolov**, PIR Center research associate; **Anton Khlopov**, deputy director of the PIR Center; **Daniil Kobayakov**, PIR Center research associate; **Vasily Lata**, PIR Center consultant, lieutenant general retired, member of the Board for Sustainable Partnership for Russia (SUPR); **Vladimir Orlov**, PIR Center director; **Roman Popov**, Voronezh State University post graduate student; **Anna Shuvalova**, PIR Center project coordinator; and **Natalia Yurchenko**, research associate at the Vladivostok University of Economics and Labor.

The guidebook was reviewed by: **Sergei Antipov**, deputy director of the Russian Federal Atomic Energy Agency, member of the PIR Center Advisory Board, member of the Board for Sustainable Partnership for Russia (SUPR), and a doctor of physics and mathematics; **Anatoly Antonov**, director of the Department for Security and Disarmament, Russian Ministry of Foreign Affairs, member of the PIR Center Advisory Board, ambassador, and doctor of economics; and **Natalia Kalinina**, deputy inspector-general of the Accounts Chamber of the Russian Federation, assistant to the Russian Federation prime minister (2003–2004), member of the PIR Center Advisory Board, member of the Board for Sustainable Partnership for Russia (SUPR), professor, and a doctor of medicine.

Materials in Part Four were also reviewed by nationals of the countries in question, wherever possible. Many thanks to **Troy Lulashnik** and his colleagues at Foreign Affairs Canada; **Mari Linnapuomi** of the Finnish Foreign Ministry's Unit for Arms Control, Disarmament and Nonprolifera-

tion; **Alain Mathiot** of the French Atomic Energy Commission's G8 Global Partnership Program; **Ole Reistad** of the Norwegian Radiation Protection Authority; **Lars Van Dassen** of the Swedish Nuclear Power Inspectorate and **Ulf Lindell** of the Swedish Foreign Ministry's Department for Global Security; **Andreas Friedrich** of the Arms Control and Disarmament Section in the Swiss Federal Department of Foreign Affairs; and **Alan Heyes** of the United Kingdom's Department of Trade and Industry for their additions and comments. However, any errors are the responsibility of the authors alone.

The authors would also like to express their sincere gratitude to **Ildar Akhtamzyan**, **Mario Giorgio Stefano Baldi**, **Günther Bäuerle**, **Valery Biryukov**, **Robert Brookfield**, **Oleg Bukharin**, **Matthew Bunn**, **Peter Buschman**, **Richard Combs**, **Yury Dubrov**, **Robert Einhorn**, **Vitaly Fedchenko**, **Yury Fedorov**, **Patric Franzen**, **Oleg Goroshko**, **Valery Govorukhin**, **Igor Govorunov**, **Zacharie Gross**, **Yulia Guzik**, **James Harrison**, **Rolf Robert Herden**, **Hans-Peter Ernst Hinrichsen**, **Hans-Juergen Hinsdorf**, **Wayne Holcombe**, **Laura Holgate**, **Donald Hughes**, **Elina Kirichenko**, **Mikhail Kondratenkov**, **Dmitry Kovchegin**, **Robert Kville**, **Vladimir Loginov**, **Patricia Metz**, **Alyona Nagibina**, **Mary Beth Nikitin**, **Vince Novak**, **Sam Nunn**, **Rozanne Oliver**, **Soei Osaka**, **Andrey Plotkin**, **Elena Polidva**, **Dmitry Politov**, **Debra Price**, **Gennady Pshakin**, **Oleg Rozhkov**, **Dieter Rudolph**, **Vladimir Rybachenkov**, **Alexander Saveliev**, **Valery Semin**, **Vladimir Shapovalov**, **Alexey Shitikov**, **Alexandra Siddall**, **Harold Smith**, **Trevor Smith**, **Nikolai Sokov**, **Jaana Teckenberg**, **Ulrik Tideström**, **Dmitry Timashkov**, **Olav Nils Thue**, **Ekaterina Votnovskaya** and **Celeste Wallander** for comments and other assistance they provided that facilitated this publication.

Further, the authors would like to particularly thank the Board for Sustainable Partnership for Russia (SUPR) – a Russian nongovernmental initiative that brings together leading Russian experts on international security – for the assistance and commentary provided: **Sergei Antipov**, **Vladimir Dvorkin**, **Natalia Kalinina**, **Vasily Lata**, **Yevgeny Maslin** (SUPR chairman), **Vladimir Orlov**, **Yury Ryzhov**, **Roland Timerbaev**, **Dmitry Yakushkin**, and **Gennady Yevstafiev**.

## Part 1. HISTORY OF THE COOPERATIVE PROGRAMS TO ELIMINATE THE LEGACY OF THE COLD WAR

After the collapse of the Soviet Union, Russia and the other Newly Independent States (NIS) faced a number of difficulties connected to the weapons of mass destruction (WMD) they had inherited. These difficulties included inter alia:

- international treaty obligations in the area of WMD reduction and elimination;
- environmental problems caused by the rapid aging of weapon systems;
- the threat of proliferation due to the unprecedented scale of WMD transportation from troubled regions and the growing degradation of security systems; and
- the need to obtain new technologies for safe and secure WMD elimination.

These difficulties were sharpened by the lack of financial resources in all of the Newly Independent States. This created the ground for accepting foreign assistance.

At the same time, the United States and other Western nations had serious reasons for providing such assistance. Among these reasons were:

- strengthening the nonproliferation regime, including elimination of nuclear weapons in Belarus, Kazakhstan and Ukraine;
- ensuring NIS compliance with international arms reduction treaties to eliminate the weapons of mass destruction;
- obtaining access to once top secret Soviet sites and scientists;
- avoiding accidents that may have serious environmental consequences;
- influencing the decision-making processes in the NIS; and
- promoting Western technologies and possibly getting access to new markets.

It was widely recognized that the end of the Cold War led to a sharp increase in the threat of WMD proliferation across the globe. In 1993, the Russian Foreign Intelligence Service (SVR) released an

unclassified report entitled "A New Security Challenge After the Cold War: WMD Proliferation." The report provided a comprehensive analysis of the global WMD proliferation threat.

### Russian Foreign Intelligence Service on Threats to International Security



It is already obvious that the disintegration of the bipolar political and military order failed to either eliminate or weaken the destabilization of the international situation on the regional level. In this regard the proliferation of WMD – nuclear, chemical, and biological – presents an exceptional threat.

WMD proliferation touches directly on Russian national interests. It would be unacceptable for a situation to take shape in which new states possessing WMD emerge around the perimeter of Russia. This situation would be complicated by the still unconsolidated states in many areas of the former Soviet Union, some of which are gripped by ethnic, national, and political conflicts. There is already a clear tendency for these conflicts to attract the interest of neighboring countries, some of which aspire to obtain WMD, while others already possess some types of WMD.

The most serious problem is the sluggishness of the process of consolidating former Soviet nuclear weapons in Russia, which is the nuclear successor to the Soviet Union. Despite previous agreements, powerful forces have now emerged that wish to permanently retain nuclear status for their countries.

Source: *A New Security Challenge After the Cold War: WMD Proliferation*. Unclassified report by the Russian Foreign Intelligence Service, 1993.

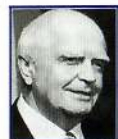
International cooperative programs aim to bolster the stability and effectiveness of the international nonproliferation regimes for nuclear weapons and other types of WMD.

The cooperative programs had the following goals:

- implementing the reductions called for by the Strategic Arms Reduction Treaty (START).



- creating the infrastructure for environmentally sound elimination of WMD, including assistance in construction of facilities for the elimination of missiles, solid and liquid missile fuel, chemical weapons, nuclear ballistic missile submarines (SSBNs), and the dismantling of nuclear weapons;
- providing secure storage and transportation for nuclear warheads and military fissile material;
- promoting ecologically sound methods of dismantling nuclear propulsion reactors and handling the associated spent nuclear fuel;
- strengthening the system of export controls on material, equipment, and technology that could be used to produce WMD; and
- retraining and finding alternate civilian employment for personnel who formerly worked in the Soviet WMD complex.



**Yevgeny MASLIN, Head of the 12<sup>th</sup> Main Directorate (GUMO) of the Russian Ministry of Defense, 1992–1997.** The 12<sup>th</sup> GUMO is responsible for the secure storage and transportation of nuclear weapons.

Regarding the situation in 1992–1993, Maslin recalls:

"Nuclear weapons specialists were becoming somewhat discouraged by the increasing number of challenges: it was necessary more often than ever before to transport nuclear weapons – by rail and by truck – all over Russia. The flow of weapons from neighboring former Soviet republics was increasing... There were not enough protective containers used for transporting nuclear weapons, nor adequate security or safety equipment."

Source: Yevgeny Maslin, "The Cooperative Threat Reduction Program and Russian National Security Interests," in Ivan Safranchuk, ed., *The Cooperative Threat Reduction Program: Evaluating Effectiveness and Future Prospects*, PIR Center Scientific Papers No. 13, January 2000, p. 5.

In all cases, Russia and the NIS did not disavow principal responsibility for achieving the objectives listed above. But the cooperative programs allowed certain problems associated with the implementation of international disarmament obligations to be resolved more quickly and thus made a significant contribution towards solving the so-called "chee-

tah-antelope dilemma" facing nonproliferation. The essence of this dilemma is that it is not enough for the antelope to run, it is crucial that the antelope run faster than the cheetah. In other words, it is not enough to upgrade physical protection systems, it is vital to upgrade them before potential proliferators take advantage of any existing deficiencies.

#### Yevgeny Petrovich MASLIN

Colonel-General Yevgeny Maslin was born in 1937. In 1959, he graduated from the Budenny Military Signal and Engineering Academy in Leningrad. General Maslin graduated from the General Staff Academy in 1992. He began his career as a brigade engineer in the military nuclear forces and, in 1997, retired as head of the 12<sup>th</sup> Main Directorate of the Russian Ministry of Defense. For his military service, General Maslin has been decorated with many honors, including the Order of the Red Star for Service to Country. He is also a laureate of the Russian Government Prize. In 1999–2002, Maslin served as a senior advisor to the PIR Center. He has been a PIR Center Executive Board member since that time. He is the head of the Board on Sustainable Partnership for Russia (SUPR). General Maslin was one of the founding fathers of Russia's international cooperative programs in the sphere of dismantling excess weapons. He is an expert in nuclear security and nuclear weapons reductions.

#### The Nunn-Lugar Program

The Nunn-Lugar program – named for its two founders, Senators Sam Nunn (D-GA) and Richard Lugar (R-PA) – was a pioneer in helping Russia eliminate the legacy of the Cold War.



**Sam NUNN**

Sam Nunn was elected to the U.S. Senate from Georgia for 24 years (1972–1996). Since 2001, he has been the co-chairman of the Nuclear Threat Initiative (NTI). He is also a professor at the Sam Nunn School of International Affairs at the Georgia Institute of Technology, and chairman of the board of trustees of the Center for Strategic and International Studies (CSIS) in Washington, DC. While in the Senate, Nunn served as chairman of the Armed Services Committee and the Permanent Subcommittee on Investigations, and also was a member of the Intelligence Committee.

Among his achievements in the Senate were legislation reorganizing the Defense Department, co-

authored with the late Senator Barry Goldwater (R-AZ), and the Cooperative Threat Reduction Program, also known as the Nunn-Lugar Program. For their work in this area, Sam Nunn and Richard Lugar were nominated for the Nobel Peace Prize in 2000 and 2005.



**Richard LUGAR**

Richard Lugar was first elected to the U.S. Senate from Indiana in 1976, and was re-elected for the third time with two-thirds of the vote in 2000. He is a leading member of the Senate committees on Foreign Affairs and Intelligence, and a well-known specialist on national security issues. In 1991, together with Sam Nunn, he was the initiator of the CTR Program.

The Nunn-Lugar program can trace its origins to the fall of 1991. After the attempted putsch in Moscow in August 1991, the question of who would have control over Soviet nuclear weapons emerged, especially with respect to weapons located in Central Asia and the Caucasus. Consolidation of these nuclear weapons in Russia became necessary lest central control over them be lost. The possible loss of control over these weapons was viewed by the United States as a serious problem, but the Soviet military had already foreseen this problem and had begun to remove tactical nuclear weapons from regions of ethnic conflicts in 1990.



**Sam NUNN, U.S. Senator, 1972–1996**

"When President Gorbachev was released from house arrest after the August putsch, an American senator visiting Moscow met with him in the Kremlin. He asked Gorbachev directly if he had managed to maintain control over the nuclear forces of the Soviet Union during the attempted coup. Gorbachev didn't answer the question, and his silence was quite eloquent. I was that American senator.

The Soviet empire was beginning to disintegrate. I was an optimist, and believed that the collapse of the Soviet Union would help the spread of freedom and reduce the threat of world war. But in the fall of 1991 I left Moscow convinced that the way events were developing would lead to the emergence of new threats. Over the course of the next two months, I joined forces with Senators Dick Lugar, Pete Domenici, Carl Levin, John Warner, Jeff Bingaman and other politicians with the goal of addressing these new security challenges."

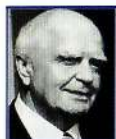
On September 27, 1991, U.S. President George Bush offered to open talks with Soviet President Mikhail Gorbachev on possible cooperation in the secure storage, transport, and dismantling of nuclear weapons, as well as in the improvement of physical protection for nuclear weapons. Gorbachev responded quickly to Bush's offer. On October 5, 1991, Gorbachev issued a statement in which he expressed readiness to open a dialogue with the United States on the storage, transport, and dismantling of nuclear weapons, as well as discussing ways to improve nuclear security. The Soviet Union also supported the Presidential Initiative on tactical nuclear weapons that the United States had announced, which increased the need for transport of tactical nuclear weapons, although not as much as the United States anticipated (as noted above, a significant number of Soviet tactical nuclear weapons had already been returned to Russia by that time).

In parallel to these steps, Senator Sam Nunn, who had just returned from a trip to the Soviet Union at the end of August 1991, introduced a bill in the U.S. Congress to provide large-scale aid to the Soviet Union, including assistance in the secure transport of nuclear weapons and in addressing the social needs of the Soviet Armed Forces. At that moment, however, this bill was not approved.

A bit later, however, with the co-sponsorship of Senator Richard Lugar, Nunn introduced a more limited bill, which addressed cooperation with the Soviet Union in the areas of transport, storage, and dismantling of nuclear weapons, as well as preventing nuclear proliferation. In this new version, the bill concentrated on bolstering the international regimes related to WMD nonproliferation. Such action was justified as serving the U.S. national interest, a rationale which was not always correctly interpreted in Russia, since in this case the national interest of the United States coincided with the interests of the international community, including Russia itself.

This bill, titled the Soviet Nuclear Threat Reduction Act of 1991, was adopted by the U.S. Senate in November 1991. In 1993, a new law – the Cooperative Threat Reduction Act – detailed specific areas of cooperation.





**Yevgeny MASLIN,**  
Head of the 12th Main Directorate of  
the Russian Ministry of Defense,  
1992–1997

"In order to correctly interpret any event, you must have a clear understanding of the circumstances under which it occurred. In the beginning of the 1990s, these circumstances included the collapse of the Soviet empire, wild disorder, sharp economic collapse, the loss by millions of people of their values, the absence of central leadership, the ambitions of the political elites in the newly independent states, and so on...

And under these conditions there were enormous nuclear forces, several tens of thousands of nuclear warheads held by all branches of the Russian Armed Forces, and also in Ukraine, Belarus, and Kazakhstan. There was also a huge "state within a state" — the Ministry of Atomic Energy with all its component parts, including many in the newly independent former republics of the Soviet Union.

For well-informed people, the situation was, to put it bluntly, alarming, both from the point of view of nuclear security and nonproliferation. Of course, thank God, the military and Minatom both maintained the security systems that had been in place for decades, which included a combination of technical and organizational measures. However, some links of this system, owing to the circumstances listed above, began to degrade — principally because of inadequate financing.

The Nunn-Lugar Program began to operate at just the right moment. At the beginning, there were many shortcomings — mutual understanding was lacking, there were differing opinions about the type of assistance needed, some of our specialists were envious, and our security services were suspicious. Nevertheless, the Nunn-Lugar Program, complementing our government efforts, helped improve nuclear security (by supplying protective equipment, additional transport, and funding dismantling of strategic nuclear weapons in Russia, Ukraine, Kazakhstan, and Belarus), and prevented proliferation (theft) of nuclear weapons and nuclear material (by creating a system of control and accounting, improving the reliability of access control and guard systems, and upgrading the qualifications of personnel in these areas and providing them with additional equipment)."

#### Richard COMBS

*Former U.S. diplomat and staff member for the Senate Armed Services Committee. He was also the main international affairs advisor to Senator Sam Nunn.*

**"In the years when the program had just started, there were serious problems. The Bush administration was skeptical about the program and did little to help it develop. The situation changed with the arrival of the Clinton administration, mainly thanks to the efforts of Secretary of Defense Les Aspin (who, as Chairman of the House Armed Services Committee had helped ensure that [Nunn-Lugar] legislation was approved by the committee and the House of Representatives), and also thanks to the work of Deputy Secretary of Defense Bill Perry, who later succeeded Aspin as Secretary."**

**Richard Combs, Former Staffer for the Senate Armed Services Committee**

#### Legal Framework for the Nunn-Lugar Program

The Nunn-Lugar Program is regulated by bilateral agreements, which were concluded between the United States and the newly independent states of the former Soviet Union. The Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage, and Destruction of Weapons and the Prevention of Weapons Proliferation, which had a term of seven years, was signed on June 17, 1992. It was extended on June 16, 1999 for another seven years. However, while the agreement itself did not need to be ratified, and took effect from the moment it was signed, the protocol to the agreement extending it required ratification by the Russian Federal Assembly, and was only temporarily in effect after its signature. As of September 1, 2005, the law ratifying the protocol had not yet been submitted to the State Duma of the Russian Federal Assembly for ratification. The agreement, even though it did not require ratification, was discussed at the Congress of People's Deputies (as the Russian parliament was known prior to 1994), where it inspired heated debate.

#### Excerpts from the Minutes of the June 17, 1992, Session of the Congress of People's Deputies at which the "umbrella" agreement [for the Nunn-Lugar Program] was discussed

##### Yevgeny Ambartsumov, Chairman of the Committee on International Affairs, from the "Motherland" faction:

"I have mixed feelings about the document we are examining. On the one hand, I don't have any doubts about the utility of the substance of the document, namely that we are using technical and financial assistance from the United States in order to achieve the secure storage, transport, and if necessary reduction of nuclear weapons, and also preventing their proliferation.

Is this an act of pure altruism by the United States? I think that it is, so to say, an act of enlightened self-interest. The United States is trying to prevent the proliferation of nuclear weapons, and wants to achieve the planned reductions in nuclear weapons. The United States also naturally does not want to permit any accidents involving nuclear weapons or nuclear materials. That's what I think about the substance.

At the same time, as they say in dialectics, there is an obvious contradiction between form and content. The form in which this idea is being presented, however, makes me feel unsatisfied, and even evokes feelings of protest. As you can see in our conclusions, there are a number of ambiguities which leave a very unpleasant impression. Not just ambiguities, but questionable phrasing, which raises the question of possible interference by the United States with the sovereignty of Russia...

What weaknesses and gaps are there in this document? First, some phrasing leaves the impression that the United States might be able to misuse this agreement to effect the export of some items that should be subject to inspection by our customs officials.

At the same time, in the supplemental agreements it is clearly specified that our responsible agency, namely Minatom, will conduct technical examinations of any equipment that needs to be imported or exported — that is Minatom will conduct examinations that our customs officials are not qualified to carry out.

But since the general or "umbrella" agreement comes first, and takes precedence, and is the document that we all will be obliged to cite, the impres-

sion could be formed that since these details are not in the "umbrella" agreement, the Americans could misuse it. On these grounds, I understand, several deputies have expressed serious misgivings about the agreement, which have been expressed in dramatic terms as violations of our sovereignty. (Strong words, like treason, have even been used.) This is one point.

A second point is the procedure under which the agreement was produced. Unfortunately, parliamentary representatives did not participate in the preparation for the presidential visit to the United States this summer. Since the signing of the agreement during that visit was very important, I think that this practice, of excluding the legislative structures from the preparation of important international agreements, is unacceptable.

It's true that in recent months and weeks the situation has improved. We are now working on a daily basis with the Ministry of Foreign Affairs. Nevertheless, I can't help but remember that when the main "umbrella" agreement between Presidents Yeltsin and Bush was being prepared, I only saw the text of the agreement at the last minute, in a visit by [Foreign Minister] Andrei Kozyrev to Sergei Filatov's office. It was only then that I saw the text and quickly noticed some serious flaws in the phrasing. This, of course, is not the way to conduct our foreign policy.

Unfortunately, our president is stuck with this agreement. As a matter of fact, Point 10 of Article 121 of the [Russian] Constitution requires the ratification of international treaties signed by the president. But this agreement states that it will take effect immediately, from the moment of signature. There is a clear contradiction. One could say, of course, that this is an agreement, and not a treaty, but according to the Vienna Convention all such documents are considered international treaties. I understand the Americans, who want to have a weighty signature on this agreement. No matter how soon they deliver the money, they want to be sure that the appropriate expenditure of the funds is guaranteed by the head of state. But the Americans are not required to consider whether that does or doesn't contradict the constitution of



their partner. Therefore I consider that the president is stuck with this agreement.

It is necessary to consider criticisms pointing out that under this agreement we lose the right of inspection, the right to bring criminal charges, for example, in the event of an accident, which might involve casualties, and so on. And the Americans receive full rights for the import and export of materials. But note: in almost every article of this "umbrella" agreement, it says that import, exemption from inspection, and exemption from import duties, applies only in the implementation of this agreement. In other words, if the Americans want to export gold, or oil, or something else, then they naturally will have to pay duties, be subject to inspection, and so on.

Now the final issue — how to resolve this situation. There are obvious gaps, shortcomings, and I would say, even foolish mistakes, including linguistic errors. One need only look at the title of the agreement to realize that it just isn't written in Russian.

How can we solve these problems? I've discussed this issue with representatives from the U.S. Embassy. They have agreed that an exchange of notes or letters between our two countries could make it possible to correct this agreement without ripping it up. And by the way, this procedure is called for in Article 14 of the agreement itself. I think that such correction is necessary. At the same time, I think it would be a mistake for us to "blow up" this agreement. This is, after all, just one of many agreements we have with the United States. And the "domino principle" could come into operation. If one falls down, so do all the others. Therefore, I think we need to take a statesmanlike attitude toward this document, and carefully consider the consequences if we were to adopt the proposal of some of the deputies who have suggested that we denounce this agreement or take some similar action. I think that would be absolutely unacceptable. But at the same time, I think that our parliament, our legislative and oversight body, must show the Ministry of Foreign Affairs that it is unacceptable to follow the practice of not even discussing such important documents with our institution, from which such unpleasant collisions result. We propose that this issue be taken up by the Committee on International Affairs and Foreign Trade, so that it can be addressed and resolved by

our Supreme Soviet. Our committee is prepared to take part in this activity jointly with the Committee on Defense. Thank you."

#### **Viktor Mikhailov, Russian Federation Minister of Atomic Energy**

"I would like to make some comments about the history of this agreement. The U.S. House of Representatives and U.S. Senate adopted a law in 1991 calling for \$400 million in assistance to Russia in the reduction and dismantling of nuclear weapons. The aid was to be granted under six conditions, and in return for compensation in the form of oil, gas, and strategic materials. Of these six conditions, two, in addition to the requirement of compensation, were absolutely unacceptable to Russia. What were these two unacceptable conditions?

The first condition was the monitoring of military-scientific research and prototype development to ensure that it was for strictly defensive purposes. And the second requirement was monitoring of nuclear disarmament at all stages.

Naturally, the Bush administration was notified that these conditions were under no circumstances acceptable to our government. Then lengthy and careful work was conducted, including by President Boris Nikolayevich Yeltsin, who laid out the Russian position at several meetings with President Bush.

In addition, a lot of work was done in the U.S. Congress and at the State Department, informing these institutions that Russia did not need such assistance under these six conditions and with the requirement for compensation. After these consultations the agreement was completed, providing \$400 million for the safe and secure transport of nuclear weapons to dismantling facilities, for the safe and secure storage of uranium and plutonium removed from nuclear weapons, and for equipment for a rapid response brigade which we have in place to respond to any accidents in this technological cycle, without conditions attached.

The agreement which was signed in June was worked out by four agencies: the Ministry of Atomic Energy, the Ministry of Foreign Affairs, the Ministry of Defense, and the Ministry of Security. It's necessary to note that this agreement is unprecedented in international practice. All issues connected with nuclear technology and nuclear weapons technology were kept secret, maintained

by each side without any information exchange. For the first time in the history of our two countries we have negotiated an agreement involving, I want to repeat again, the safe and secure transport of nuclear materials in Russia. During the preparation of this agreement, the Vienna Convention on Early Notification of a Nuclear Accident (1986) and U.S. legislation on nuclear weapons were used as examples.

Concerning Article VII, in which privileges are granted to personnel who are invited or may be invited by the executive branch of the Russian government to conduct work, the privileges under consideration are the same as those usually granted in work in the nuclear complex, with nuclear materials. No American can be responsible for the technological security of work on our territory, conducted with any type of equipment (even if it is supplied by the United States), or for nuclear security during such work. Naturally, all responsibility for such work is borne only by the Russian side, only by Russian personnel — namely those who conduct it. Consultants and other specialists, who might be present during such work, do not bear this responsibility.

Furthermore, in this article it is clearly specified: with the exception of general treaties. This statement means that there are treaties between the two states in force, and this article does not repeal them, but to the contrary, places the accent precisely on the work in the nuclear technological chain, in the nuclear technological cycle.

In total, we have signed agreements for \$100 million. If you convert that into rubles, it's 40 billion rubles. I consider that we have taken a significant burden off our already stressed national budget—40 billion rubles! I can tell you that to buy materials worth that amount, I would have to stop all scientific research work in my ministry for two years.

Specialists from our nuclear weapons complex, including specialists from Arzamas-16, participated in the negotiation of these agreements, which are supplemental to the "umbrella" agreement. And none of you can accuse those people, who have devoted their whole lives to the defense and prestige of our country, of damaging it.

At all facilities which we currently maintain that are operating below standards, we naturally welcome such assistance. And those specialists who we will

invite, if it proves necessary — I want to underline, if it proves necessary — should have some privileges. In this case we are discussing inspection of these specialists. But as far as inspection of equipment is concerned, inspections will be conducted and that is specified in each of the project agreements."

#### **Sergei Baburin, Deputy for the Sovetskiy Electoral District, Omsk Oblast**

"What is your opinion, why has the Chairman of the Supreme Soviet forced the Congress to address this very important issue now, despite the agenda and with a number of procedural violations, when the deputies are tired and their attention is devoted to other issues?"

#### **Viktor Mikhailov, Minister of Atomic Energy**

"Every day of the Congress I have been here and went back to my office at the ministry only during break periods. I waited for the chance to take the floor and speak. So the accusation that Deputy Astafiev threw at the President, and, in fact, at all of us who worked on this agreement — that we betrayed the interests of Russia — is too harsh. I consider that there cannot be any compromise on this issue. The last speaker tried to find a compromise. On this issue, no compromise is possible."

#### **Mikhail Astafiev, Deputy for the Dzerzhinskiy Electoral District, Moscow**

"In your speech you recalled a very interesting detail about how the initial proposal by the United States was a bit different. In return for so-called free disarmament they demanded raw materials from us, oil, and even access to certain types of secrets. Doesn't it seem to you that this proposal best expresses the policy of the so-called new political thinking, when they tell us that all this is without charge and in the interest of friendship, but nevertheless, all that the High Contracting Party needed was still obtained through the new version of this agreement. Although you contend that you stood up for some of our interests, it's still possible to export anything at all without any inspection. I insist on this [interpretation of the agreement]. That's how it's written [in the agreement]. I asked two questions about it. And I'd like to ask you one last question. Doesn't it seem to you that such treaties must be concluded in secret with a government that is not subject to any monitoring? It's against this



kind of practice that we are protesting, including at this Congress."

#### Viktor Mikhailov, Minister of Atomic Energy

I have waited for the question: why is this in the interests of the United States? After all, it is \$400 million, and so on. What's really going on here? Although at the outset they did demand compensation and set conditions. I already said that speaking before the U.S. Congress, I insisted: if you want to cooperate, then it should be without demanding compensation. It's complicated for Russia to find sufficient financing now, it's very difficult.

Now why did they make the offer? It's a reasonable question. Why did they still make the offer? I'll tell you: for two reasons.

The first reason: it is, of course, the fear that under present conditions in Russia there could be an accident during the transport, disassembly, storage—and so on—of nuclear weapons. Such an accident might seem under other circumstances to be a local

event, but at the present time it might serve as a match and lead to very serious consequences in our country.

And the second reason: under the agreements reached by Presidents Bush and Yeltsin, disassembly [of nuclear weapons] will end sometime toward the end of this century. The United States will implement this agreement. We, though, if we don't succeed in providing safe and secure transport and storage of nuclear materials, will be forced to halt disassembly. I can say that this is one of the main arguments that made even some hot heads in the United States reconsider their position. Toward the end of the century, it could mean that there will be 10,000 nuclear weapons in the United States, but 35,000 would remain in Russia. Dismantling cannot proceed unless you have the necessary conditions—both safety and security."

**"Congress of People's Deputies of the Russian Federation", *Rossiskaya Gazeta*, December 19, 1992, pp. 14–15.**



**Viktor Nikitovich Mikhailov**

*Doctor of Technical Science, Academic of the Russian Academy of Sciences, Scientific Director of the All-Russian Scientific Research Institute of Experimental Physics (VNIIEF), Minister of Atomic Energy of the Russian Federation (Minatom), 1992–1998, since 2000, Director of the Institute of Strategic Stability of the Federal Agency for Atomic Energy of the Russian Federation (Rosatom). The establishment of the Nunn-Lugar program took place during his years as the head of Minatom. He played a major role in the negotiation of the U.S.-Russian Highly Enriched Uranium Agreement, and in the development of cooperation between Russia and the United States during the initial phase of the Cooperative Threat Reduction Program.*

The 1992 U.S.-Russian agreement is a "framework" or "umbrella" agreement, while concrete work in various sectors requires separate executive agreements between the corresponding agencies of the two countries. At first, the text of the agreement named the U.S. Department of Defense and the Russian Ministry of Atomic Energy as the imple-

menting agencies. However, the multiplicity of tasks involved demanded the involvement of a wider range of implementing agencies in Russia, which was taken into account in the 1999 protocol extending the agreement.

As a result, the agency in Russia responsible for activities associated with the elimination of nuclear weapons and their delivery systems and also for the transportation and storage of nuclear weapons was the State Committee for the Military Industry (Goskomoboronprom), which was later reorganized into the Ministry of Military Industry; in 1993, Goskomoboronprom signed a corresponding agreement with the U.S. Department of Defense. After the elimination of the Ministry of Military Industry in 1997, these functions were transferred to the Ministry of the Economy, while actual implementation of activities was carried out by the Russian Space Agency (which became the Russian Aviation and Space Agency in 1999, and after March 2004, the Federal Space Agency); the Ministry of Defense is responsible for some programs (mainly programs for the reduction of strategic nuclear weapons, and the transport and storage of nuclear warheads). Minatom (since March 2004, Rosatom) continues to be responsible

#### The Legal Basis of U.S. Cooperative Assistance Programs

December 12, 1991	Soviet Nuclear Threat Reduction Act.
June 17, 1992	Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation.
October 11, 1992	Cooperative Threat Reduction Act.
June 15–16, 1999	Protocol to the Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation.

for the storage and disposal of fissile materials, and in 1998 was also given responsibility for the dismantling of decommissioned nuclear submarines.

The failure of the "umbrella" agreement to designate an executive agency in Russia responsible for chemical disarmament made it necessary to conclude a supplemental agreement between the Russian Presidential Commission on Chemical and Biological Disarmament and the U.S. Department of Defense. After the dissolution of this Commission, its functions were assumed by the Russian Munitions Agency; from there they were taken over in March 2004 by the Federal Industry Agency's Center for Conventional Problems and Disarmament Programs.

On the U.S. side, in addition to the Department of Defense, the Department of Energy was later added, assuming responsibility for issues associated with the storage and disposition of fissile materials, as well as a number of other aspects of the program; the U.S. National Laboratories, located in Sandia, Los Alamos, Livermore, and several other sites, actively participate in assistance programs. Some areas of cooperation are overseen by the State Department, which plays a leading role in the International Science and Technology Center (ISTC)—an organization which finances civilian scientific work conducted by Russian specialists who formerly worked in the Russian defense complex.

#### Results of the CTR Program Implementation Since 1995 (as of September 2005)

6,760	Warheads destroyed
590	Intercontinental ballistic missiles dismantled
484	Silos destroyed
150	Heavy bombers dismantled
28	Strategic nuclear submarines dismantled

Source: Nunn-Lugar Scorecard on [http://lugar.senate.gov/reports/Nunn-Lugar\\_Report\\_2005.pdf](http://lugar.senate.gov/reports/Nunn-Lugar_Report_2005.pdf)

#### Funding for the Nunn-Lugar Program

The Soviet Nuclear Threat Reduction Act, which entered into force on December 12, 1991, provided for the program to be financed at the level of up to \$400 million annually. In 1993, this law was

replaced by the Cooperative Threat Reduction Act, financing for which was included in the U.S. federal budget for fiscal year 1994. The new law provided a more detailed outline of the assistance program, and also authorized cooperation in the elimination of chemical weapons. In January 1999, U.S.



President Bill Clinton launched an initiative to expand the CTR program, with the goal of intensifying work in areas like nuclear security (financing the dismantling of nuclear warheads and the secure storage of the fissile materials removed from them), assisting employment programs for former Russian weapons scientists, and so on. The initiative was motivated by the August 1998 financial crisis, which made it more difficult for Russia to fund cooperative programs.

At the beginning of 2001, the Bush administration launched a full review of the CTR program in response to increasing criticism from conservative groups in the United States, particularly in the Republican Party, which accused the program of being poorly managed, inadequately monitoring the expenditure of funds, spending excessive amounts on administrative overhead (which meant mostly inside the U.S. government), and other faults. Many U.S. politicians made comments to the effect that assistance to Russia should be significantly reduced, since Russia, after all, was finding the funds to maintain and modernize its nuclear arsenal; some high-ranking U.S. officials were inclined to condition the continuation of CTR on the termination of Russian military and nuclear power plant cooperation with Iran and a number of other countries. Many also suggested placing a number of other conditions on Russia, most of which had political overtones and touched upon Russian national security.

The cooperative nonproliferation programs were evaluated in terms of their original goals, which included both increasing United States national security and cost effectiveness. However, even under the strictest application of these criteria, most of the programs would be retained and indeed only a few were significantly cut back. As a result, in comparison to the Clinton administration budget for FY2001, the Bush administration's budget request for FY2002 was reduced only modestly – from \$873.8 million to \$773.7 million (although it should be noted that the Clinton administration had planned to request \$1.2 billion for FY2002).

These cuts by the Bush administration met with a mixed reception in the United States. In January 2001, two major figures in the Republican and Democratic parties – former Senator Howard Baker

and former presidential advisor Lloyd Cutler – presented a report (known as the Baker-Cutler Report) that called for an increase in funding for the Cooperative Threat Reduction programs.

The Baker-Cutler report includes a recommendation that the United States devote \$30 billion to Cooperative Threat Reduction programs over a 8–10 year period.



**Howard Baker**

Howard Baker was elected to three terms as U.S. Senator from Tennessee (1967–1985). In the Senate he was leader of the Republican minority (1977–1981) and majority (1981–1984).

In 1980, he was a candidate for the Republican presidential nomination. He served as chief of staff for President Ronald Reagan from 1987–1988. From 2001 to 2004, he served as U.S. Ambassador to Japan.



**Lloyd Cutler**

Lloyd Cutler served as Counselor to Presidents Jimmy Carter and Bill Clinton. He also served on a number of presidential commissions examining issues related to U.S. national security and international affairs. On February 6, 2004, he was named Counsel to the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, which submitted its final report in March 2005.

Immediately after the release of the report, steps were taken in Congress to restore the previous level of funding for cooperative nonproliferation programs. In April 2001, the Senate adopted the Warner-Dominici amendment, which increased the budget for cooperative nonproliferation programs with Russia by \$100 million, restoring the 2001 funding level.

In total, from 1992 through 2004, approximately \$9.2 billion was budgeted for the Cooperative Threat Reduction Programs in the United States.

Table 1 shows that before 1999, most of this funding was directed through the Department of Defense, while after 1999, projects administered by the Department of Energy became the largest element of the program.

**Table 1**  
Distribution of Cooperative Nonproliferation Program Funds by Department (appropriated in \$ millions, by fiscal year)<sup>1</sup>

Department	Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006 <sup>2</sup>
Department of Energy		1.3	16.9	51.2	89.5	205.5	310.9	329.9	935.9	411.4	556.3	741.6	895.4	1,065.6	1,227.1	1,316.6
Department of State		11.0	37.2	110.8	18.2	50.0	46.7	76.2	118.8	172.4	161.9	235.4	157.3	165.7	157.0	164.5
Department of Defense		12.9	246.3	592.5	379.9	294.7	375.0	383.2	449.7	404.6	418.3	373.2	375.1	466.8	421.1	427.7
<b>Total</b>		<b>25.2</b>	<b>300.4</b>	<b>754.5</b>	<b>487.6</b>	<b>550.2</b>	<b>732.4</b>	<b>789.3</b>	<b>1,504.4</b>	<b>988.4</b>	<b>1,136.5</b>	<b>1,350.1</b>	<b>1,427.8</b>	<b>1,698.1</b>	<b>1,805.2</b>	<b>1,908.8</b>

**Note:** In order to properly interpret these figures, it should be noted that they refer to "appropriated" funds, which means that they have been designated by Congress for expenditure on these programs. After the U.S. government budget is adopted, U.S. executive branch agencies conclude contracts with contractors for the implementation of specific projects. This process can take from one to three years, although in some cases it is not limited and can be longer. The amount included in these contracts is then considered "obligated." Often contracts are not concluded for the full amount granted by Congress, and the interval between the conclusion of a contract and when the contractor actually receives the funds can be a few years. Funds that have been transferred to a contractor are termed "disbursed." Sometimes contractors do not receive all the funds designated in a specific contract. As a result, the accounts of U.S. executive branch agencies accumulate significant sums which are designated by Congress for cooperative nonproliferation programs, but have not been expended in any specific contracts yet. As a result of this complicated bureaucratic procedure, the publicized budget figures for cooperative nonproliferation programs do not correspond to the amount of money actually expended, which is significantly lower.

**Table 2**  
Gap Between Committed and Expended Funds in the Global Partnership Program Implementation

Donor State	Total Pledge	Funds Committed	Period	Funds Expended	Period
Canada	C\$1 billion	C\$363.12 million and \$400,000	06/02 – 05/05	C\$82.17 million	06/02 – 05/05
France	€750 million	€172.3 million	06/02 – 07/05	no data	06/02 – 07/05
Germany	up to \$1.5 billion	€264 million	06/02 – 12/04	€150.37 million	06/02 – 12/04
Italy	€1 billion	€732.7 million	06/02 – 07/05	€7.7 million	06/02 – 07/05
Japan	\$200 million	\$8.55 million	06/02 – 07/05	\$7.94 million	06/02 – 07/05
Russia	\$2 billion	\$1.25 billion	01/02 – 12/05	\$831.6 million	01/02 – 06/04
UK	\$750 million	£149 million	06/02 – 07/05	£52.8 million	06/02 – 07/05
USA	up to \$10 billion	\$3,307 billion	06/02 – 09/05	\$1,803 billion	06/02 – 09/04

**Note:** The information on funds committed and expended is taken from the Global Partnership Working Group Annual Report 2005 (Consolidated Report Data, Annex A). The information in this report is supplied on a national basis in a format appropriate to each country. This report contained also data submitted by Denmark, the EU Commission, Finland, Norway, Republic of Korea, Sweden, and Switzerland. Some Global Partnership donor-states (Australia, Belgium, the Czech Republic, Ireland, the Netherlands, New Zealand, Poland) decided not to submit their data to the Working Group Consolidated Report.

<sup>1</sup> Interactive Threat Reduction Budget Database, [http://www.nti.org/e\\_research/cnwm/charts/cnm\\_funding\\_interactive.asp](http://www.nti.org/e_research/cnwm/charts/cnm_funding_interactive.asp)

<sup>2</sup> Budget request.



## Experts on the Success of Cooperative Threat Reduction

### Richard Combs, Former Staff Member, U.S. Senate Armed Service Committee.

"The renunciation by Belarus, Kazakhstan, and Ukraine of the nuclear weapons they inherited from the former Soviet Union can be viewed as a success of the [Cooperative Threat Reduction] program. The legal basis provided by the Nunn-Lugar legislation allowed the United States to offer significant legal and technical assistance to the NIS. This assistance proved to be a critical factor for these countries in their decision to renounce nuclear weapons. As a result, the number of nuclear powers was reduced by three — something I view as a major nuclear non-proliferation success."



### Harold Smith, Former Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs.

"Without a doubt it was possible to convince Ukraine, Kazakhstan, and Belarus to give up their nuclear arsenals in exchange for assistance. The number of nuclear powers was reduced by three."

### Harold Smith

In 1993, Harold Smith was appointed Assistant to the Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs. He supervised work (including reduction) on the nuclear arsenals of the United States and NATO, as well as chemical, and biological defense programs. He was also responsible for the implementation of Cooperative Threat Reduction programs.



### Gennady Pshakin, Director of the Analytic Center for Nonproliferation Policy Studies, Obninsk, Kaluga region.

"First, with the beginning of the Nunn-Lugar program, the initial opportunities were created for Russian nuclear specialists to open a direct dialogue with their American counterparts. The enthusiasm with which the specialists from both countries worked in the area of nonproliferation and the results that they achieved in the first few years of the program allow one to state that the specialists necessary to resolve the nonproliferation challenges

were engaged. Second, U.S. funding was allowed to enter Russia for the first time in order to provide technical assistance to the formerly secret nuclear sector. Third, the U.S. assistance was very timely. The economic situation in Russia, especially in the nuclear sector, was simply catastrophic."

### Gennady Mikhailovich Pshakin

Director of the Analytic Center for Nonproliferation Policy Studies. President of the Obninsk branch of the International Institute for Nuclear Materials Management (INMM). Researcher at the Institute of Physics and Power Engineering (IPPE) located in Obninsk, Kaluzhskaya Oblast, Russia. He was an inspector with the International Atomic Energy Agency (IAEA) Action Team in Iraq, and is now a member of the PIR Center Advisory Board.



### Celeste Wallander, Executive Director of the Program on New Approaches to Russian Security (PONARS) at the Center for Strategic and International Studies (CSIS).

"Nuclear materials protection, control, and accounting (MPC&A), and also the program for safe and secure storage of nuclear weapons. These were the basic problems, and although they have not been fully resolved, the fact that 40 percent of material at [Russian] facilities has had its security upgraded with assistance from the [MPC&A] program is in itself a major success. These programs were launched in a timely manner and significantly improved security in a relatively short period of time. The remaining aspects of nonproliferation (closed cities, braindrain, etc.) should also be addressed by the program, but at its second or third stage."

### Celeste Wallander

Executive Director of the Program on New Approaches to Russian Security (PONARS) at the Center for Strategic and International Studies (CSIS), located in Washington, DC. She was previously a Senior Fellow at the Council on Foreign Relations, and is a member of the PIR Center Advisory Board.



### Valery Semin, Counselor, Permanent Mission of the Russian Federation to the United Nations in Geneva.

"The main achievement of the Nunn-Lugar program is the installation of modern equipment at nuclear facilities for accounting, control, and physical protection of fissile material; the training of personnel; and the provision of employment to former weapons scientists and engineers."

### Valery Vitalyevich Semin

Mr. Semin is Counselor at the Permanent Mission of the Russian Federation to the United Nations in Geneva. Previously, he served as head of the Global Partnership Division and Principal Counselor in the Department of Security and Disarmament of the Russian Foreign Ministry, Science Counselor at the Russian Consulate General in San Francisco, and deputy head of a directorate at the Russian Intellectual Property Agency. He is a member of the PIR Center Advisory Board.



### Vladimir Rybachenkov, Counselor, Russian Embassy in Washington, DC.

"The most important contribution of the Cooperative Threat Reduction program was in resolving the key problem of increasing security during the transport of nuclear weapons to the facilities of the 12th Main Directorate of the Ministry of Defense following the collapse of the Soviet Union. The program made real progress possible under conditions of limited financial support from the Russian budget by establishing a personnel training system, and supplying these facilities in a relatively short period of time with modern physical protection systems, automated systems of control and accounting, and emergency equipment."

### Vladimir Ivanovich Rybachenkov

Mr. Rybachenkov is Counselor for Arms Control at the Russian Embassy in Washington, DC. Previously, he served as Counselor in the Department of Security and Disarmament in the Russian Foreign Ministry. He is a member of the PIR Center Advisory Board.



### Vasily Lata, Consultant to the PIR Center, former First Deputy Commander of the Main Staff of the Russian Strategic Rocket Forces.

"The success of the Nunn-Lugar program is that it was exceptionally well-considered and timed, allowing Russia to carry out its international obligations in the designated time frames. The program also helped convince Russian political leaders and legislators of the importance of financing nuclear security and disarmament programs. No less important was the program's ability to continue when political relations were strained."

### Vasily Filippovich Lata

Lieutenant General (retired) Vasily F. Lata is a Doctor of Military Science, and a professor and consultant to the PIR Center. He worked for over 35 years in the Soviet and Russian military, including serving as First Deputy Head of the Military Policy Directorate of the Russian Defense Ministry and later head of the Operations Directorate of the Main Staff of the Russian Strategic Rocket Forces and First Deputy Commander of the Main Staff of the Russian Strategic Rocket Forces.



### Sam Nunn, U.S. Senator, 1972–1996

"I believe the biggest success has been the work in persuading Ukraine, Kazakhstan, and Belarus to give up the nuclear weapons they inherited from the Soviet Union. This eliminated more nuclear weapons than those contained in the entire nuclear arsenals of China, France, and the United Kingdom combined, and kept these newly independent states from adding their fingers to the nuclear trigger. Equally important, this success proves that Russia and the United States can cooperate to affect dramatic change and improvement in the sphere of global security. It is imperative that we find new and creative ways to build upon this cooperation in the face of catastrophic terrorism."

### Sam Nunn

Sam Nunn was a U.S. Senator, 1972–1996. Since 2001, he has been the co-chairman of the Nuclear Threat Initiative (NTI). He is also chairman of the board of trustees of the Center for Strategic and International Studies (CSIS) in Washington, DC.



The overall level of funding appropriated for threat reduction activities does not correspond to the actual amount of funds that reach recipient countries. Although official data for actual expenditures in recipient countries is not released, some experts have made estimates. According to these estimates, for example, only 20 to 40 percent of the funds appropriated for programs administered by the Department of Energy – such as improving the physical security of storage sites for fissile material – actually reaches Russia. No more than

40 percent of the funds appropriated for programs administered by the Department of Defense – like eliminating missiles, missile silos, and nuclear missile submarines, and transporting nuclear warhead – reaches Russia. According to this criterion, the most successful program is the "Second Line of Defense" program (supplying customs posts with radiation detection equipments), under which 70 to 80 percent of the appropriated funds are spent in Russia.

Table 3

Distribution of Nunn-Lugar Funding by Program Area (\$ million, by fiscal year)<sup>3</sup>

Department	Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006 <sup>4</sup>
Securing Warheads and Materials		5.5	84.7	120.0	79.2	176.4	225.5	239.1	277.4	333.5	357.1	356.0	280.0	323.4	464.8	453.2
Interdicting Nuclear Trafficking		—	—	—	—	—	9.7	22.3	28.9	52.0	48.0	130.4	221.6	120.9	162.4	193.6
Stabilizing Employment for Nuclear Personnel		0.2	1.3	78.6	29.5	35.0	46.3	50.4	65.2	102.2	99.8	108.8	105.1	105.0	106.0	105.5
Monitoring Stockpiles and Reductions		—	—	3.6	7.4	6.8	12.6	15.4	13.6	15.7	26.1	22.9	34.8	35.2	38.7	34.0
Ending Further Production of Nuclear Materials		—	—	—	4.9	—	10.0	16.0	3.3	0.2	32.1	55.9	49.2	81.8	44.0	132.0
Reducing Excess Stockpiles		—	—	—	—	2.6	10.4	12.2	554.9	29.9	39.5	16.4	47.0	56.2	73.4	64.0
Biological Weapons Nonproliferation		—	—	—	—	—	3.0	7.5	7.5	26.6	28.0	31.0	54.7	67.8	68.7	60.8
Destruction of Russian Chemical Weapons		1.6	0.9	34.3	18.2	13.0	70.7	39.4	88.4	20.0	0.0	119.9	132.9	200.3	157.9	108.5
Other Threat Reduction		6.9	167.3	401.4	268.1	192.8	179.6	231.6	253.8	197.7	249.5	222.7	117.8	88.0	130.0	161.3
Threat Reduction (outside the NIS)		11.0	46.2	116.6	80.4	123.7	164.9	154.3	211.4	210.4	256.5	286.9	384.6	619.3	559.5	595.9
<b>Total</b>		<b>25.2</b>	<b>300.4</b>	<b>754.5</b>	<b>487.7</b>	<b>550.3</b>	<b>732.7</b>	<b>788.2</b>	<b>1,504.4</b>	<b>988.4</b>	<b>1,136.6</b>	<b>1,350.9</b>	<b>1,427.7</b>	<b>1,697.9</b>	<b>1,805.4</b>	<b>1,908.8</b>

<sup>3</sup> Interactive Threat Reduction Budget Database, [http://www.nti.org/e\\_research/cnwm/charts/cnm\\_funding\\_interactive.asp](http://www.nti.org/e_research/cnwm/charts/cnm_funding_interactive.asp)

<sup>4</sup> Budget request

## Other Cooperative Programs in the Nuclear Sector

In addition to the United States, several other Western countries worked with Russia throughout the 1990s to eliminate the legacy of the Cold War. These countries have established a range of bilateral and multilateral programs. The programs were generally concentrated in the civilian sector and were aimed at improving the security and safety of nuclear power generation and assisting in the dis-

position of radioactive waste. In some cases, these projects also had military aspects. In order to make this cooperation possible Russia and a number of foreign countries concluded a series of intergovernmental agreements in the 1990s.

In addition, several intergovernmental agreements signed during the Soviet era became legal framework for cooperation on eliminating the legacy of the Cold War. For example, cooperative projects with Finland are based on such an agreement.

## Agreements Between Russia and Foreign States on Assistance in Eliminating the Legacy of the Cold War

May 14, 1969	Agreement between the Government of the Republic of Finland and the Government of the Union of Soviet Socialist Republics Concerning Cooperation in the Peaceful Use of Atomic Energy
November 12, 1992	Agreement between the Government of the Republic of France and the Government of the Russian Federation on Cooperation on the Safe Disposal of Nuclear Weapons in Russia and on the Use for Peaceful Purposes of Nuclear Materials from Weapons
December 16, 1992	Agreement between the Government of the Russian Federation and the Government of the Federal Republic of Germany on Assistance in Eliminating Nuclear and Chemical Weapons
October 13, 1993	Agreement between the Government of Japan and the Government of the Russian Federation Concerning Cooperation for the Elimination of Nuclear Weapons Reduced in the Russian Federation
September 3, 1996	Agreement between the Government of the Russian Federation and the Government of the United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy
May 26, 1998	Agreement between the Government of the Russian Federation and the Government of the Kingdom of Norway on Environmental Cooperation in Connection with the Dismantling of Russian Nuclear Powered Submarines Withdrawn from the Navy's Service in the Northern Region, and the Enhancement of Nuclear and Radiation Safety
March 14, 2000	Agreement Between the Government of the Russian Federation and the Government of the Kingdom of the Netherlands on Cooperation in the Area of Secure Elimination of Nuclear Weapons and Dismantling of Russian Nuclear Submarines

Although these programs were implemented primarily through bilateral intergovernmental agreements, a number of multilateral schemes of cooperation emerged as well. For example, European countries worked through the European Union.

Another example was concluding of the Northern Dimension Environmental Partnership (NDEP) and emergence of the Arctic Military Environmental Cooperation (AMEC) among Norway, Russia, the United Kingdom and the United States.



### Bilateral Agreements

It should be noted that in the beginning, the countries of the European Union set a high priority on the safety and security of nuclear power stations. This priority can be explained partly by the desire to prevent a repetition of the 1986 Chernobyl accident and partly by the fact that European countries then paid relatively less attention to WMD proliferation issues than did the United States.

Still, a number of states gave Russia significant assistance in such areas as: nuclear warhead security, MPC&A, retraining of weapons scientists, and radiological and environmental remediation.

For example, during the early and mid-1990s, the 12<sup>th</sup> GUMO received specialized transport containers for nuclear weapons from France and the United Kingdom, and accident equipment from Germany and Italy.

Russian-German cooperation on eliminating surplus Russian nuclear weapons began on December 16, 1992, when the Agreement between the Government of the Russian Federation and the Government of the Federal Republic of Germany on Assistance in Eliminating Nuclear and Chemical Weapons was signed. The agreement, which has no fixed expiration date, entered into force on March 7, 1993. Under this agreement a number of practical steps have been taken, including:

- Germany provided instruments and equipment, including remote manipulators, for use in case of an accident, robots, as well as specialized equipment for working with radioactive material. The equipment was delivered from 1993 to 2000, and cost a total of €12.5 million.
- Germany and Russia agreed on conducting experiments in 1994 regarding the possible use of weapons plutonium in civilian nuclear reactors. From 1993 to 2002, Germany spent \$38-42.5 million on disposition of Russian plutonium.

Germany made a decisive contribution to the construction of the first operational chemical weapons destruction facility in Russia, which opened in Gornyy, Saratov Oblast, on December 19, 2002. A second Russian destruction facility in Kambarka to be opened in early 2006 is constructed with German assistance.

France and Russia signed the Agreement between the Government of the Republic of France and the Government of the Russian Federation on Cooperation on the Safe Disposal of Nuclear Weapons in Russia and on the Use for Peaceful Purposes of Nuclear Materials from Weapons on November 12, 1992. This agreement had a ten-year term, but provided for automatic renewal if both parties agree. The agreement provides for Franco-Russian cooperation in the following areas, among others:

- transport of nuclear weapons in Russia;
- joint efforts to eliminate surplus Russian nuclear weapons;
- storage of nuclear materials removed from dismantled Russian nuclear weapons; and
- use of nuclear materials removed from dismantled Russian nuclear weapons for peaceful purposes; and
- MPC&A.

All subsequent threat reduction agreements between the two countries are based on this document. A number of these agreements formed the basis of the AIDA program (*Aide au Démantèlement*) – “Assistance in the Dismantling of Nuclear Weapons.” This program began at the end of 1992 and continued until April 1998, when France delivered the final containers provided for under the November 1992 Agreement on Cooperation in Providing Safe and Secure Transport of Nuclear Weapons in Russia. The overall amount of assistance provided by France under the AIDA program from 1992 to 1998 totaled about \$57 million (400 million French francs). To this sum, one should also add expenditures on the AIDA-MOX program of \$8.5 million from 1998–2000. As a result, French assistance for 1992–2000 totals \$65.5 million.

Cooperation with Scandinavian countries also began in the 1990s, especially in Northwest Russia. Norway made a significant contribution in this area. Beginning in 1995, Norway developed a series of projects to assist Russia in ensuring radiation safety and nonproliferation of WMD and related materials and technologies. These projects covered the disposal of radioactive waste, transport and storage of spent nuclear fuel, and dismantling of Russian nuclear submarines. From 1994–2000, Norway spent \$120 million on these projects.

It is worth mentioning that non-European nations took part in this cooperation as well. Already in April 1993, the Japanese government pledged to give the former Soviet Union \$100 million to aid in the dismantlement of nuclear weapons. Of this total, \$70 million was appropriated for Russia. This sum was later increased to 25 billion yen (approximately \$208 million).

On October 13, 1993, Russian Foreign Minister Andrei Kozyrev and Japanese Deputy Prime Minister Tsutomu Hata signed an aid agreement that outlined several areas of cooperation between the two countries. These areas included safe transportation of nuclear material, plutonium disposition, and safe radioactive waste handling.

### European Union

The largest collective program implemented under the auspices of the EU is the Technical Assistance to the Commonwealth of Independent States (TACIS) program, which was started in 1991 with the designation of \$54 million ECU for upgrading safety and security and nuclear power stations. The next year, the EU designated 80 million ECU for the same purpose to the countries of the former Soviet Union, including 32 million ECU for Ukraine and Russia. These projects were implemented at six nuclear power plants: Kola, Kalinin, Beloyarsk, Smolensk, Balakovo, and Leningrad (Sosnovy Bor). The projects included work on improving safety and security, the handling of radioactive waste, accident preparedness and planning, and improving the qualifications of plant personnel. Under the TACIS program, modernization work was completed on the first and second units of the Leningrad Nuclear Power Plant. In 1997, Russia's nuclear power corporation, Rosenergoatom, received an additional \$24 million to upgrade safety and security at Russian nuclear power plants. In addition, a separate TACIS program established two nuclear information centers at Balakovo and St. Petersburg.

The implementation of TACIS projects has faced problems very similar to those encountered by the Nunn-Lugar program, although the Europeans have been more open and willing to admit their own shortcomings. For example, an audit of TACIS conducted in 1998 showed that from an overall total of \$350 million, only \$104 million were spent

in Russia. At the same time, the overall budget of the program has expanded – plans call for the expenditure of \$4 billion in 2000–2006. Program priorities remain unchanged: safety and security of nuclear power plants, physical protection, and also disposition of radioactive waste and related projects. Modernization of nuclear reactors also remains among the program's basic goals; however, appropriations for this project are no longer “automatic,” but are released for specific projects after agreements have been concluded with Russia.

In 2001, an agreement on cooperation in the areas of nuclear energy and nuclear security was negotiated between Russia and the European Union. The agreement calls for cooperation in such areas as: reactor operations safety, improvement of radiation protection, disposition of radioactive waste, and decommissioning of nuclear facilities. In December 2003, the European Union adopted a new nuclear security strategy. This strategy places a high priority on cooperation with Russia.

### Global Partnership

At the beginning of the century both Russia and the United States understood that their resources were too scarce to accomplish all of the tasks they were facing within the CTR framework. The more active participation of other Western nations could change the situation. As described above, although several European countries and Japan launched some projects in 1990s, these were projects of a relatively small scale. A new multilateral initiative was needed to get the developed countries of Europe and Asia involved in a more active way. This initiative was launched at the G8 Kananaskis summit. The leaders of the G8 adopted a declaration on June 27, 2002, according to which they pledged to provide \$20 billion in assistance to Russia and other countries over the following decade to implement nonproliferation and disarmament programs. Under this program also known as “10 plus 10 over 10,” the United States agreed to provide half the total assistance, while the other \$10 billion are to be provided by the rest of the G8, plus any other countries that express the desire to join the program.



### G8 Leaders - the Founding Fathers of the Global Partnership (In the Order of the G8 Presidency Rotation)



**Jacques CHIRAC,**  
President of France

"We are determined to make great efforts to help Russia handle the nuclear threat and avoid the threat of nuclear terror."



**George BUSH, U.S. President**

"We will work closely with our coalition partners in order to prevent access by terrorists or their state sponsors to materials, technologies, and information that would allow them to create weapons of mass destruction and means of their delivery."



**Tony BLAIR, Prime Minister of the United Kingdom**

"The events of September 11, 2001, did not leave the slightest doubt that terrorists will use any means against our countries and people. We decided to create the new Global Partnership Against the Spread of Weapons of Mass Destruction so that these lethal weapons would not fall into the hands of terrorists."



**Vladimir PUTIN, President of the Russian Federation**

"Some media speak of a proliferation threat coming from Russian territory... This threat does not exist. These (surplus) weapons are under tough control. However, these weapons may represent a threat for the environment. This is a fact. We... agreed on cooperation within the framework of the... Global Partnership, ...worked out particular approaches and rules for joint activities. Russian intends to continue to fulfill its obli-

gations in this sphere in the future, but this cooperation will spread to other countries as well, first and foremost to the states of the former Soviet Union."

**Gerhard SCHRÖDER, Federal Chancellor of the Republic of Germany, 1998-2005**



"The unprecedented successes of the German-Russian partnership and Russia's coming closer to Europe is now extending to the community of Western states. Including Russia in the group of the world's most economically developed countries marks the beginning of a new era."

**Junichiro KOIZUMI, Prime Minister of Japan**



"We believe that the chief responsibility lies with Russia. But since this program will benefit the whole world, we are prepared to provide funding despite our current budgetary difficulties."

**Silvio BERLUSCONI, Prime Minister of Italy**



"The question of the arsenals that could be acquired by state-evildoers is of interest to all of humanity, and the decision [to create the Global Partnership] was taken unanimously and was hardly discussed at all."

**Jean CHRÉTIEN, Prime Minister of Canada, 1993-2003**



"The summit in Kananaskis demonstrated the value of G8 cooperation and that we can work out concrete solutions to the problems before us."

### Statement by G8 Leaders, Kananaskis, Canada, June 27, 2002

"In a major initiative to implement those principles, we have also decided today to launch a new G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction. Under this initiative, we will support specific cooperation projects, initially in Russia, to address non-proliferation, disarmament, counter-terrorism and nuclear safety issues. Among our priority concerns are the destruction of chemical weapons, the dismantlement of decommissioned nuclear submarines, the disposition of fissile materials and the employment of former weapons scientists. We will commit to raise up to \$20 billion to support such projects over the next ten years."

Speaking about priorities in his final press-conference in Kananaskis on June 27, 2002, President Putin indicated that Russia puts particular emphasis on two of the four priorities. He said, "We are mostly interested in chemical weapons destruction and the dismantlement of decommissioned nuclear-powered submarines." Other countries indicated their priorities as well (see page 34). Some of these priorities, like strengthening biosafety and biosecurity or ensuring nuclear

power plant safety, were not included in the list of priorities. Russia reacted skeptically towards offers of such aid, however some donors include this type of cooperation in their national Global Partnership progress reports.

In Kananaskis the leaders of the G8 countries also agreed on six principles aimed at preventing terrorist access to WMD or related materials. They also defined ten areas in which new and expanded cooperative projects would be undertaken.

### The G8 Global Partnership: Principles to Prevent Terrorists, or Those that Harbour Them, from Gaining Access to Weapons or Materials of Mass Destruction, Adopted at Kananaskis, June 26-27, 2002

1. Promote the adoption, universalization, full implementation and, where necessary, strengthening of multilateral treaties and other international instruments whose aim is to prevent the proliferation or illicit acquisition of such items; strengthen the institutions designed to implement these instruments.
2. Develop and maintain appropriate effective measures to account for and secure such items in production, use, storage and domestic and international transport; provide assistance to states lacking sufficient resources to account for and secure these items.
3. Develop and maintain appropriate effective physical protection measures applied to facilities which house such items, including defence in depth; provide assistance to states lacking sufficient resources to protect their facilities.
4. Develop and maintain effective border controls, law enforcement efforts and international cooperation to detect, deter and interdict in cases of illicit trafficking in such items, for example through installation of detection systems, training of customs and law enforcement personnel and coopera-

tion in tracking these items; provide assistance to states lacking sufficient expertise or resources to strengthen their capacity to detect, deter and interdict in cases of illicit trafficking in these items.

5. Develop, review and maintain effective national export and transshipment controls over items on multilateral export control lists, as well as items that are not identified on such lists but which may nevertheless contribute to the development, production or use of nuclear, chemical and biological weapons and missiles, with particular consideration of end-user, catch-all and brokering aspects; provide assistance to states lacking the legal and regulatory infrastructure, implementation experience and/or resources to develop their export and transshipment control systems in this regard.

6. Adopt and strengthen efforts to manage and dispose of stocks of fissile materials designated as no longer required for defence purposes, eliminate all chemical weapons, and minimize holdings of dangerous biological pathogens and toxins, based on the recognition that the threat of terrorist acquisition is reduced as the overall quantity of such items is reduced.



### Russian Presidential Decree No. 314, March 9, 2004, "On the System and Structure of Federal Executive Agencies" (excerpts)

1. Eliminate:
  - Ministry of Atomic Energy; state property management responsibilities of the abolished Ministry of Atomic Energy.
  - Russian Munitions Agency; • Federal Industry Agency, giving it the legal, state service, and state property management functions of the Russian Munitions Agency... and the Russian Shipbuilding Agency.
  - Russian Shipbuilding Agency.
2. Establish:
  - Ministry of Industry and Energy, giving it the functions under law and other regulations belonging to the abolished... Ministry of Atomic Energy, Russian Munitions Agency... Russian Shipbuilding Agency... Federal Inspectorate for Nuclear and Radiation Safety, and also... the Russian Aerospace Agency.
3. Reorganize:
  - The Russian Aerospace Agency into the Federal Space Agency, giving its authority to issue regulatory acts in its sphere of responsibility to the Ministry of Industry and Energy.
4. Rename:
  - The Federal Inspectorate for Nuclear and Radiation Safety into the Federal Nuclear Inspection Service.
- Federal Atomic Energy Agency, giving it the legal functions, state service functions, and

The Senior Officials Group was established as a mechanism for coordination among the G8 Global Partnership members. In Russia, an inter-agency coordination mechanism was established under the leadership of the prime minister to ensure political coordination. Ministries and federal agencies appointed coordinators at the level of deputy minister or deputy agency head. The Ministry of Foreign Affairs, which is in charge of all Russian foreign policy activities, created a special post: Ambassador at Large for the Global Partnership. Mr. Anatoly Antonov was appointed to this post.

Under the terms of the administrative reform announced in Russian Presidential Decree No. 314, of March 9, 2004, "On the System and Structure of Federal Executive Agencies," a number of ministries and agencies were reorganized or abolished (for more details see the section on the Russian Federation in Part 4). For example, the Russian Munitions Agency was abolished, and the Ministry of Atomic Energy was reorganized into the Federal Atomic Energy Agency (Rosatom) under the Ministry of Industry. On May 20, 2004, Presidential Decree No. 649 was issued, changing some of the initial administra-

### Russian Executive Branch Agencies Participating in G8 Global Partnership Projects (following Presidential Decree No. 649, May 20, 2004)

- Ministry of Foreign Affairs
- Ministry of Defense
  - Federal Service for Technological and Export Control
- Ministry of Industry and Energy
  - Federal Industry Agency
- Ministry of Economic Development and Trade
  - Federal Customs Service
- Federal Atomic Energy Agency (Rosatom)
- Federal Space Agency
- Federal Environmental, Technical, and Atomic Inspection Service

Figure 1  
Structure of the Russian Executive Branch Agencies Responsible for Implementing the G8 Global Partnership

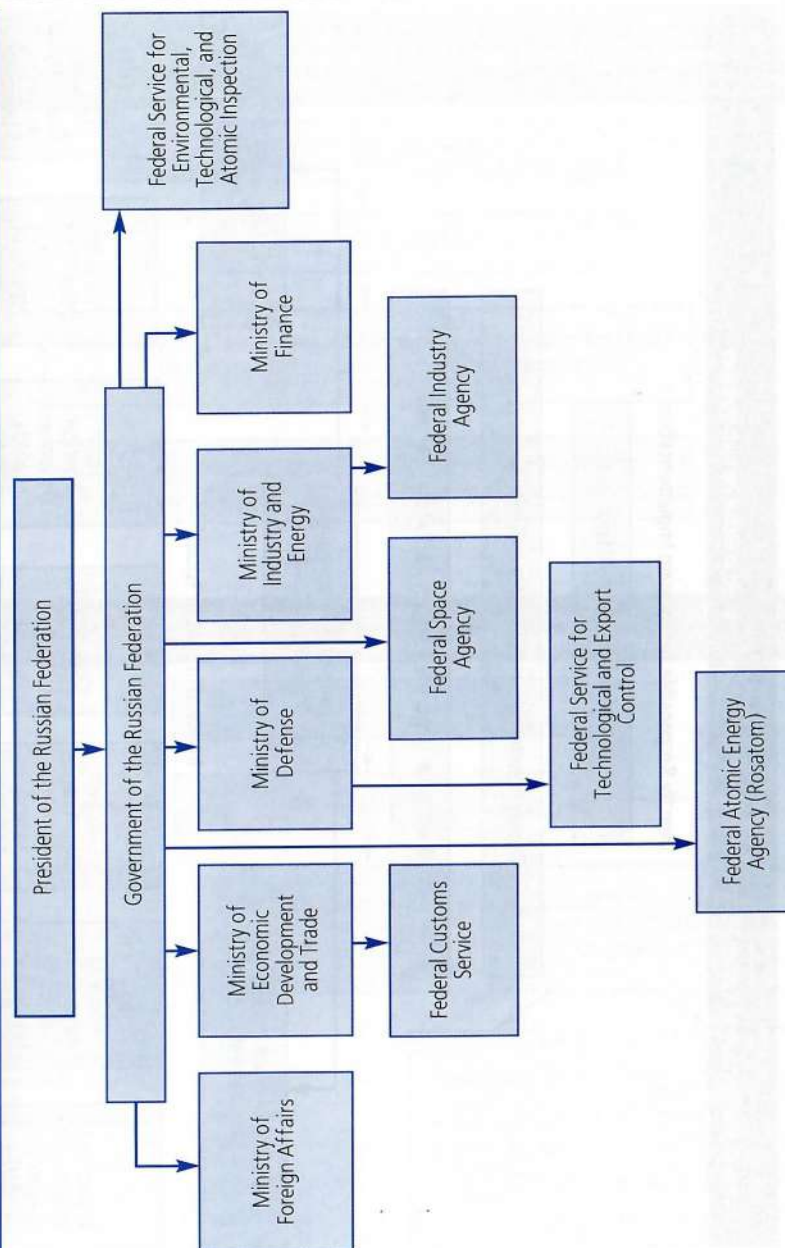




Figure 2

## Organizational Structure of Russian Ministry of Foreign Affairs Divisions Involved in Global Partnership Issues

## Directly Responsible for Program Implementation:

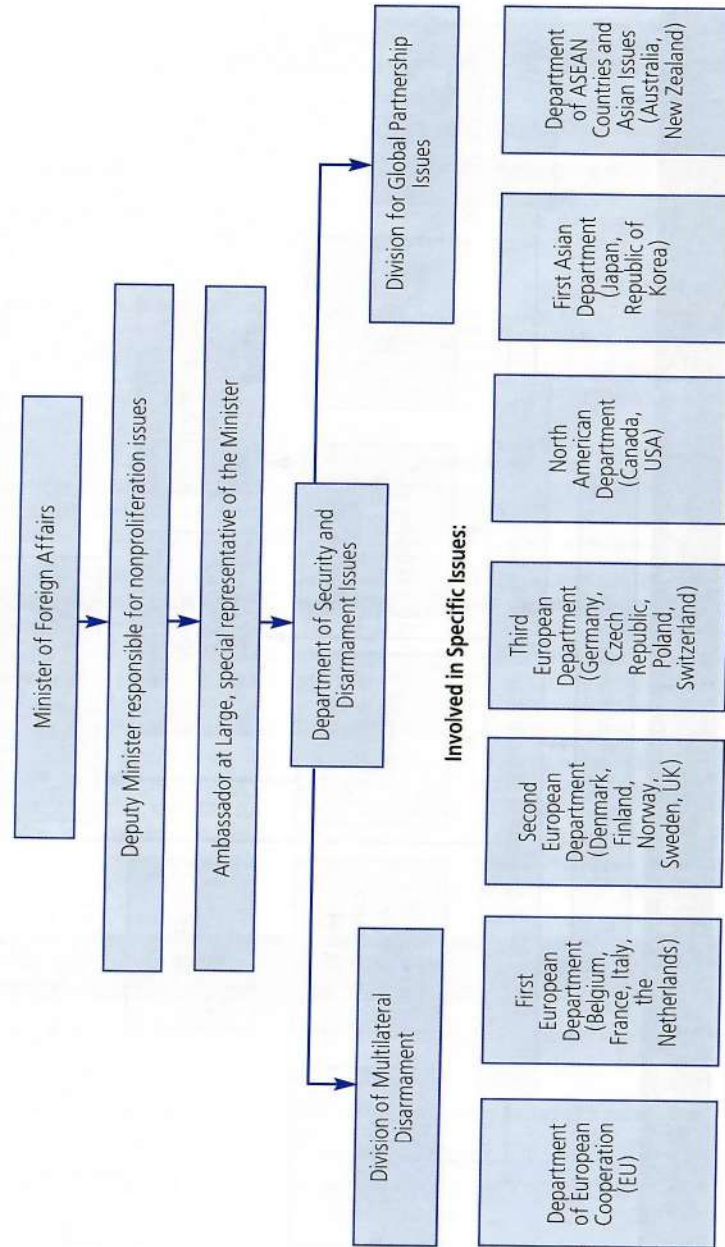


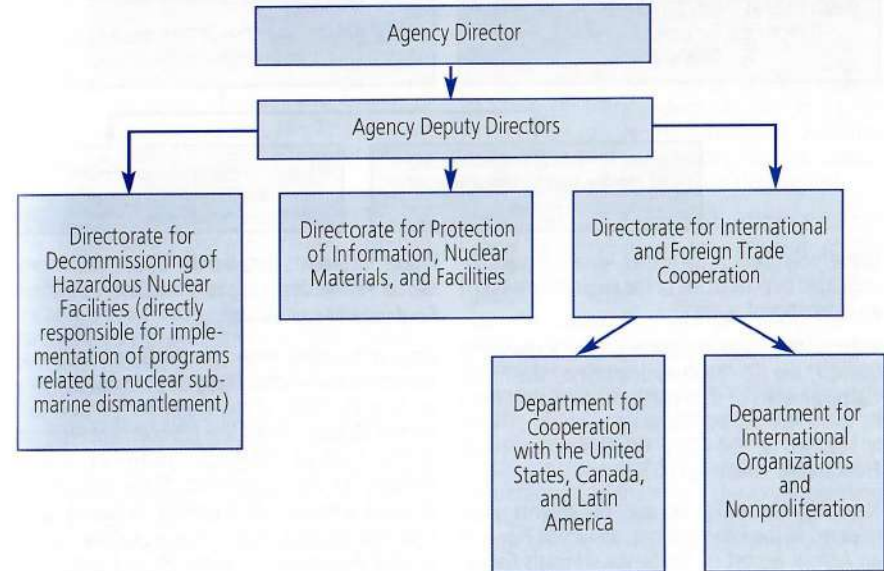
Figure 3

## Structure of Executive Branch Agencies Responsible for Implementing Chemical Disarmament Programs



Figure 4

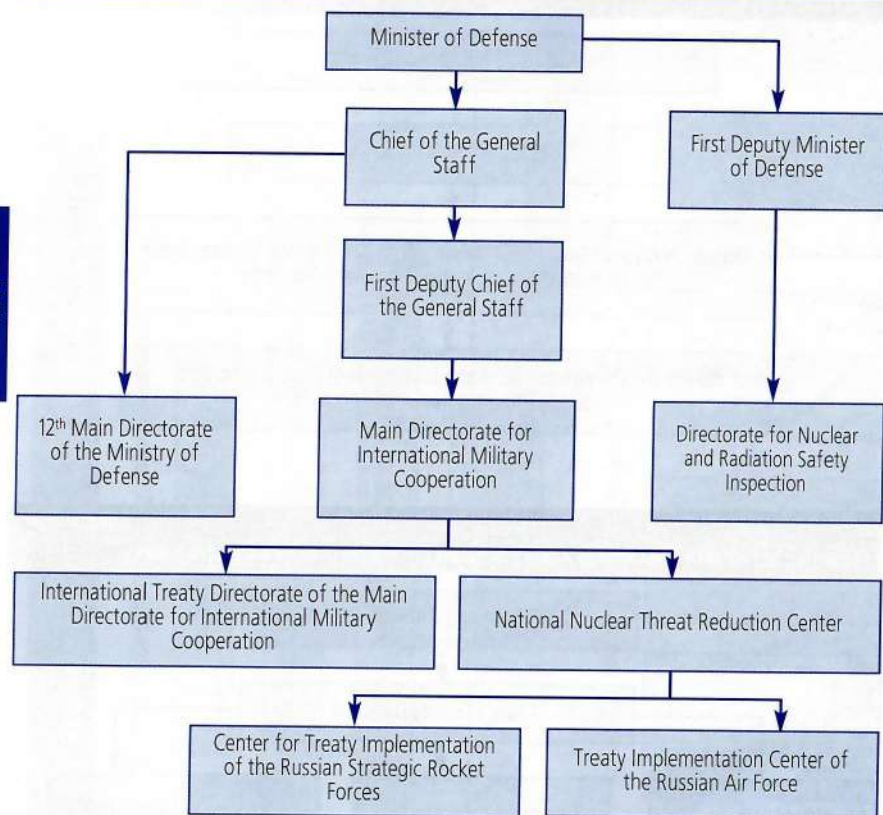
## Structure of Federal Atomic Energy Agency Divisions Involved in Global Partnership Issues





Structure of Ministry of Defense Divisions Involved in Global Partnership Issues

Figure 5



tive reform plans. In particular, Rosatom was subordinated directly to the prime minister (making it an independent agency).

During the year following the Kananaskis Summit, the G8 countries determined the financial parameters of their participation in the Global Partnership program. These figures were officially released at the 2003 G8 Summit in Evian, France, held June 1–3, 2003.

New G8 Global Partnership documents were released at the Evian Summit: an Action Plan and an Annual Report of the Senior Officials Group.

These documents detailed the basic goals of the Global Partnership and paths for their realization. For details, see pp. 34–35.

Among the other important results of 2003 was the conclusion – after four years of negotiation – on May 21, 2003, of the Framework Agreement for the Multilateral Nuclear Environment Program in the Russian Federation (MNEPR), and a Protocol to the Agreement. These documents resolved a number of questions, including taxation and liability issues. The signature of the MNEPR Agreement removed the last barriers to

### Action Plan of the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, Evian France, 1–3 June 2003 (excerpts)

We commit ourselves to an active program to continue the implementation of the initiative and to achieve substantial progress by the next Summit.

Our goals are:

1. To pursue the universal adoption of the non-proliferation principles;
2. To reach our Kananaskis commitment of raising up to \$20 billion over ten years through contributions from new donors or additional pledges from Partners;
3. To significantly expand project activities, building upon preparatory work to establish implementing frameworks and to develop plans for project activities, as well as to sustain steady progress in projects already underway. We will continue to review progress in initiation and implementation of projects over the coming year, and to oversee co-ordination of projects, in order to review priorities, avoid gaps and overlaps, and assess consistency of

projects with international security objectives, in accordance with our priorities;

4. To resolve all outstanding implementation challenges and to review the implementation of all guidelines in practice, keeping in mind the need for uniform treatment of Partners, reflecting our cooperative approach;
5. To expand participation in the Global Partnership to interested non-G8 donor countries that are willing to adopt the Kananaskis documents. While still focusing on projects in Russia, we mandate the Chair to enter into preliminary discussions with new or current recipient countries including those of the former Soviet Union that are prepared to adopt the Kananaskis documents, as the Ukraine has already done;
6. To inform other organizations, parliamentary representatives, and publics of the importance of the Global Partnership.

the participation of many European countries in cooperative nonproliferation programs with Russia. For more details see p. 36.

The United States did not sign the MNEPR Protocol, since Washington considered its liability provisions inadequate in comparison to those established by the 1992 CTR “umbrella” agreement, which provides absolute immunity [for the United States] from all liability.

After the 2003 G8 Evian Summit, new countries joined the Global Partnership: Finland, the Netherlands, Norway, Poland, Sweden, and Switzerland. After the 2004 Sea Island summit, the partnership again grew, to include Australia, Belgium, the Czech Republic, Denmark, Ireland, New Zealand, and South Korea. Together, these new countries pledged up to \$200 million.

Already at the Evian Summit in 2003, the possibility of Ukraine joining the Global Partnership as a recipient country was raised. The United States, which held G8 chair in 2004, expressed the desire for Ukraine and several of the other newly independent states to become participants in the cooperative

programs. However, at the Sea Island Summit, no decision to expand the number of recipient countries was taken. Only at the end of 2004 Ukraine was officially granted this status under the Global Partnership.

At the 2004 G8 Sea Island Summit, several documents were adopted, including an Action Plan on Nonproliferation, a Global Partnership Annual Report, and a Global Partnership Projects Consolidated Report.

During the G8 Summit at Gleneagles, the Global Partnership was not very high on the leaders’ agenda. No new country joined the Global Partnership. However, the debates over the Global Partnership among the G8 political directors were rather heated. In the G8 mechanism political directors are officials (usually deputy ministers of the Foreign Affairs Ministries) in charge of international security relations, including disarmament. The most controversial issue was biosecurity cooperation. As the result the Evian wording on this matter was repeated. Three documents on Global Partnership were adopted during the Summit.



## Global Partnership Against The Spread of Weapons and Materials of Mass Destruction: G8 Senior Group Annual Report, June 2005 (excerpts)

### 1. Priorities for Further Improving Implementation

[There is] a need to place increased emphasis on overall or long-term planning for more complex project areas. This is particularly important where a number of donors are undertaking closely related projects or where some of their projects are dependent on the completion of others... The Global Partnership Working Group (GPWG) will work further on the following:

- Where appropriate, consideration of the establishment of more international coordination groups such as those successfully established in the past year: the group for nuclear submarine dismantlement related work at Andreeva Bay, the CWD-related Shchuch'ye Co-ordination Working Group, and the group for coordination of elimination of Radioisotope Thermoelectric Generators (RTG). These are intended to facilitate efficient and timely implementation and to avoid unnecessary competition over resources.
- Improved co-ordination of detailed information for proposed projects, as well as committed projects, to avoid duplication of effort...
- Continued assistance from more experienced donors to those partners at an earlier stage of involvement in order to enhance confidence and reduce risk, including to facilitate participation through piggy-backing and to provide project management advice...
- Site access arrangements are working smoothly in many cases, but it is clear that access problems can impact on the successful implementation of projects... Wherever possible, access should also be granted to donors that provide financial resources to projects led by others.
- The Russian procedures covering tax exemption issues are being clarified in order for all parties to have the necessary information on the documentation required.
- Prompt negotiation of straightforward amendments to existing agreements to enable a wider range of priority work to be undertaken.

### 2. Practical Progress in Implementing the Global Partnership Chemical Weapon Destruction

Work is going forward to help eliminate Russia's stockpile of chemical weapons (CW)...

Canada, the Czech Republic, the European Union, Finland, Germany, Ireland, Italy, the Netherlands, New Zealand, Norway, Poland, Russia, Sweden, Switzerland, the United Kingdom, and the United States have made contributions to support the construction of chemical weapon destruction facilities at Gorny, Shchuch'ye, and Kambarka. Assistance projects begun in previous years and led by Germany have contributed to the destruction of over 900 tonnes of CW at the only operational Russian CW destruction facility at Gorny...

The Russian Federation has stressed the importance of allocating more resources to the field of chemical weapons destruction, especially in 2005–2008.

### 3. Dismantlement of Submarines

Substantial progress has been made since 2002... Progress has been particularly pronounced in NW Russia where Germany, Canada, the UK, the US and Norway have active programmes underway and further projects are under discussion between the Russian Federation and Italy. The US has dismantled 6 SSBNs since 2002, and is scheduled to complete the dismantlement of another SSBN in the summer of 2005. At the Nerpa shipyard Germany has financed to date dismantling of multi-part units of 6 submarines and one three-part unit floating in Saida Bay. Canada has established a programme to finance dismantling of three submarines a year at the Zvezdochka shipyard and expects to dismantle a total of 12 submarines by 2008. To date, Canada has completed the towing and de-fuelling of 3 submarines and the dismantlement of 2. The UK has successfully financed to time and cost the dismantlement of 2 submarines at Zvezdochka, and dismantlement of a third submarine is under way at the Nerpa shipyard. Norway is financing the dismantlement of its third submarine...

In the Pacific Far East, Japan has successfully completed the dismantlement of 1 nuclear submarine... Australia has provided financial resources for the dismantlement of a nuclear submarine in the Pacific Far East.

## Framework Agreement on a Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR), Stockholm, May 21, 2003

The Framework Agreement on a Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR) was signed by representatives of Belgium, Denmark, Finland, France, Germany, the Netherlands, Norway, Russia, Sweden, Great Britain, the United States, the European Union, and Euratom.

The MNEPR framework is applicable to the following issue areas:

- Security of Spent Nuclear Fuel;
- Disposition of Radioactive Waste;
- Dismantling of Nuclear Submarines and Icebreakers.

MNEPR is primarily applicable to projects in Northwest Russia. The agreement resolves a number of important issues, including: exemption of foreign assistance from taxes and duties, access by foreign personnel to Russian facilities, and dispute resolution. Liability issues are regulated by a special protocol to the agreement.

Protocol on Claims, Legal Proceedings and Indemnification to the Framework Agreement on a Multilateral Nuclear Environmental Program in the Russian Federation (excerpts):

1. With the exception of claims for injury or damage against individuals arising from omissions or acts of such individuals done with intent to cause injury or damage, the Russian Party shall bring no claims or legal proceedings of any kind against the

Contributors and their personnel or contractors, subcontractors, consultants, suppliers or sub-suppliers of equipment, goods or services at any tier and their personnel, for any loss or damage of whatsoever nature. (Article 2, Paragraph 1)

2. With the exception of claims for Nuclear Damage against individuals arising from omissions or acts of such individuals done with intent to cause damage, the Russian Party shall provide for the adequate legal defense of and indemnify, and shall bring no claims or legal proceedings against the Contributors and their personnel, or any contractors, subcontractors, consultants, suppliers, or sub-suppliers of equipment, goods or services at any tier and their personnel in connection with third-party claims, in any court or forum, arising from activities undertaken pursuant to the Agreement, for Nuclear Damage occurring within or outside the territory of the Russian Federation, that results from a Nuclear Incident occurring within the territory of the Russian Federation. (Article 2, Paragraph 2)

3. Upon request by a Party, the Russian Party or its authorized representative shall issue an indemnity confirmation letter to any contractor, subcontractor, consultant, supplier or subsupplier confirming the provisions of this Protocol. A standard form of such Indemnity Confirmation Letter is enclosed as an integral part of this Protocol. (Article 2, Paragraph 3)

### How the Global Partnership Works

The Global Partnership program is implemented through bilateral and multilateral mechanisms. The principal implementation mechanism is through a bilateral agreement between Russia and partnership donor countries. A simplified explanation of the implementation mechanism is provided below.

After a country declares its intention to expend a certain amount of funds on projects under the Global Partnership, an intergovernmental agreement between Russia and that country needs to be negotiated, if such an agreement does not already exist. This agreement, which often has a "frame-

work" character, usually outlines the areas of cooperation, its time frame, the conditions of assistance (including access and liability provisions), and a coordination mechanism. The next stage is the negotiation of executive agreements, which define specific cooperative projects. In some executive, or implementing, agreements the companies that will serve as contractors conducting the work are identified. Then, as a rule, on the basis of open tenders, commercial contracts are concluded for the work. Sometimes contracts are concluded without an executive agreement, which is permitted under current Russian law (for example, see Figures 6 and 7).



Table 4

## Global Partnership: Pledges by Area

Country	Pledge	Funding Areas	Russian Debt
Australia	10 million Australian dollars (over US \$7.7 million)*	• Submarine dismantlement	\$300 million
Belgium	€0.5 million (about \$651,000)	• Northern Dimension Environmental Partnership (NDEP)	\$200 million
Canada	1 billion Canadian dollars (about US \$800 million)	• CW elimination • Plutonium disposition • Radiological security • Redirection of weapons scientists • Submarine dismantlement	\$1.6 billion
Czech Republic	€85,000 (over \$156,000)	• CW elimination	\$900 million
Denmark	€17.2 million (about \$21.3 million)	• Green Cross chemical weapons outreach program • NDEP	\$200 million
European Union	€1 billion (about \$1.2 billion)	• CW elimination • Export controls and border security • MPC&A upgrades • Physical security upgrades at civilian nuclear facilities • Plutonium disposition • Redirection of weapons scientists • Submarine dismantlement	—
Finland	€15 million (about \$18.6 million)	• CW elimination • Physical security upgrades at civilian nuclear facilities	\$600 million
France	€750 million (over \$930 million)	• Biosecurity assistance • CW elimination • Plutonium disposition • Radiological security • Submarine dismantlement	\$3.1 billion
Germany	\$1.5 billion**	• CW elimination • MPC&A upgrades • Submarine dismantlement	\$18.8 billion

Country	Pledge	Funding Areas	Russian Debt
Ireland	No pledged announced to date	No official announcement	—
Italy	€1 billion (about \$1.2)	• CW elimination • Submarine dismantlement	\$5.2 billion
Japan	\$200 million	• Plutonium disposition • Submarine dismantlement	\$3.5 billion
Netherlands	€24 million (about US \$29.8 million)	• CW elimination • Plutonium disposition • Submarine dismantlement	\$600 million
New Zealand	1.2 million New Zealand dollars (about US \$780,000)	• CW elimination	—
Norway	\$118 million	• CW elimination • Physical security upgrades at civilian nuclear facilities • Radiological security • Submarine dismantlement	\$100 million
Poland	About \$100,000	• CW elimination • Redirection of weapons scientists	—
Russian Federation	\$2 billion	• CW elimination • Submarine dismantlement	—
South Korea	No pledged announced to date	• Redirection of weapon scientists	\$1.2 billion
Sweden***	€16 million & \$20 million (nearly \$40 million)	• Biosecurity assistance • Export controls MPC&A upgrades • Physical security upgrades at civilian nuclear facilities • Radiological security • Submarine dismantlement	\$100 million



Country	Pledge	Funding Areas	Russian Debt
Switzerland	17 million Swiss francs (about \$13.7 million)	<ul style="list-style-type: none"> <li>• CW elimination</li> <li>• Halting plutonium production</li> </ul>	\$300 million
United Kingdom	\$750 million	<ul style="list-style-type: none"> <li>• CW elimination</li> <li>• MPC&amp;A upgrades</li> <li>• Physical security upgrades at civilian nuclear facilities</li> <li>• Plutonium disposition</li> <li>• Redirection of weapons scientists</li> <li>• Submarine dismantlement</li> </ul>	\$1.3 billion
United States	\$10 billion	<ul style="list-style-type: none"> <li>• Biosecurity assistance</li> <li>• CW elimination</li> <li>• Export controls and border security</li> <li>• Halting plutonium production</li> <li>• MPC&amp;A upgrades</li> <li>• Nuclear weapons security upgrades</li> <li>• Physical security upgrades at civilian nuclear facilities</li> <li>• Redirection of weapons scientists</li> <li>• Strategic nuclear weapons elimination, including elimination of weapons platforms (bombers and SSBNs)</li> </ul>	\$3.3 billion
<b>TOTAL AS OF SEPTEMBER 1, 2005</b>	About \$18.83 billion		\$41.3 billion

Sources: Global Partnership Bulletin, No. 1-8, 2003, p. 4; Conversion rates from "OANDA, The Currency Site," [www.oanda.com](http://www.oanda.com); Group of Eight Consolidated Report of Global Partnership Projects, June 2004, [www.g8usa.gov/pdfs/GPConsolidatedReportofGPPProjectsJune2004.pdf](http://www.g8usa.gov/pdfs/GPConsolidatedReportofGPPProjectsJune2004.pdf); NDEP News, December 2004, Issue 6, p. 1; Denmark's Environmental Assistance to Eastern Europe in 2002, Official Website of the Danish Environmental Protection Agency, [www.mst.dk](http://www.mst.dk), November 1, 2002; The G8 Global Partnership: German-Russian Cooperation, German Federal Ministry for Economics and Labor, May 2004; "Australia Joined Japan in Dismantling Nuclear Submarines in the Russian Far East," Official Russian Federal Atomic Energy Agency Website, June 25, 2004; The G8 Global Partnership: Progress during 2004 on the UK's Programmes to Address Nuclear, Chemical and Biological Legacies in the Former Soviet Union (Second Annual Report, 2004), UK Department of Trade and Industry Website, <http://www.dti.gov.uk>; "Japan Intends to Finance the Dismantlement of Five Nuclear Submarines," Official Russian Federal Atomic Energy Agency Website, January 13, 2005; "Chemical Disarmament," Swiss Update, Center for International Security Policy, December 2004.

\* Conversions as of September 1, 2005.

\*\* Germany's original pledge of €1.5 billion became a \$1.5 billion pledge at Sea Island.

\*\*\* For legal reasons, the Swedish Government is unable to pledge any specific sums of money until a project has been identified and approved.

An example of a multilateral mechanism is cooperation under the Northern Dimension Environmental Partnership (NDEP), an international program with legal status under MNEPR that is directed at the

improvement of the radiological and environmental situation in Northwest Russia. A general scheme of cooperation under a multilateral framework under the Global Partnership is presented below.

Figure 6

## Schematic of Bilateral Cooperation under the Global Partnership



Figure 7

## Bilateral Cooperation in the Dismantling and Elimination of SS-24 Rail Mobile Intercontinental Ballistic Missiles





### Conclusion of an Executive Agreement (if desired by the donor country) between the Appropriate Agencies of Each Country

According to the 1992 "umbrella" agreement, each country independently selects an executive organization for project implementation. According to Russian Government Decision No. KA-P4-10775 of July 23, 2002, the executive agency for the dismantling of intercontinental ballistic missiles is the Russian Aerospace Agency (since March 9, 2004, the Federal Space Agency). In the United States the U.S. Defense Threat Reduction Agency (part of the U.S. Department of Defense) was chosen as the executive organization for ballistic missiles dismantlement.

### Designation of Contractors for the Project (in accordance with the legislation of the donor country). The General Contractor is Usually a Company or Organization Based in the Donor Country

The U.S. Defense Threat Reduction Agency (DTRA) concluded a contract with Washington Group International (WGI) on September 29, 2002 for the dismantlement and elimination of SS-24 intercontinental ballistic missiles in Perm, Russia.

### Conclusion of Contracts between the General Contractor and Russian Organizations (Russian subcontractors)

Under the terms of DTRA contract No. 01-01-D-0012/004, WGI concluded more than 30 agreements with Russian companies for over \$50 million, including state owned, publicly traded, and privately held firms:

- Perm Mashinostroitel – over 10 contracts;
- Scientific Research Institute of Polymeric Materials – over 10 contracts;
- Perm State University – three contracts;
- "Rosobshchemash" Corporation – over 10 contracts;
- "Askond" Company – over 10 contracts;
- "Transtelekom" Company;
- "UralSpetsMash-Invest" – three contracts;
- Private entrepreneurs – several contracts.

### Conclusion of Contracts between Russian Subcontractors and Subordinate Organizations during Project Implementation

One of the Russian subcontractors, the Perm Mashinostroitel Federal State Unitary Enterprise, concluded more than 20 contracts with local organizations for construction and repair work and the supply of materials and equipment, including:

- "Trust No. 7" Corporation – construction work;
- "Uralremstroil" Corporation – automated fire suppression system;
- "BEYT-Yu" – building repairs.

Another subcontractor, the Scientific Research Institute of Polymeric Materials, concluded more than 30 contracts with design, construction, manufacturing, and transport companies.

Figure 8

### Schematic of Multilateral Cooperation under the Global Partnership



### The Northern Dimension Environmental Partnership (NDEP)

The NDEP, established in 2001, is a partnership between the European Commission, Russia, the European Bank of Reconstruction and Development (EBRD), the European Investment Bank, the Investment Bank of Northern Europe, and the World Bank. The NDEP was launched in 1997, in order to address the specific problems of the Baltic, the Arctic, and Northwest Russia.

The NDEP was founded to resolve environmental problems and remediate risks associated with the radioactive waste located in Northwestern regions of the Russian Federation. The goal of the NDEP is

to improve coordination between Russia, donor countries, and international financial institutions. The Northern Dimension Environmental Partnership Support Fund mobilizes donor countries' resources to guarantee long-term loans from international financial institutions.

The Russian Federation, the European Commission, and also Belgium, Canada, Denmark, Finland, France, Germany, the Netherlands, Norway, Sweden, and the United Kingdom have already made donations to the NDEP Support Fund which exceed €150 million.



## Timeline of International WMD Threat Reduction Programs in Russia

November 27, 1991	U.S. Congress adopts Soviet Nuclear Threat Reduction Act, launching the Cooperative Threat Reduction Program (Nunn-Lugar Program).
June 17, 1992	Signing of the Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage, and Destruction of Weapons and the Prevention of Weapons Proliferation, which had a seven-year term and provides the legal basis for bilateral U.S.-Russian threat reduction activities.
April 19–20, 1996	Nuclear Security Summit in Moscow. A Summit statement is released, containing a series of nuclear security initiatives, including strengthening physical protection of nuclear materials, disposing of surplus nuclear materials, and establishing a program for preventing and combating illicit nuclear trafficking.
June 15–16, 1999	Extension of the Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage, and Destruction of Weapons and the Prevention of Weapons Proliferation, which provides the legal basis for bilateral U.S.-Russian threat reduction activities.
June 16, 2001	Ljubljana Summit between U.S. President George W. Bush and Russian President Vladimir Putin, which leads to intensified U.S.-Russian security cooperation.
September 11, 2001	Terrorist attacks on the United States demonstrate the threat of mass casualty terrorism and underline the need to keep WMD out of the hands of terrorists.
June 27, 2002	G8 Global Partnership established at the Kananaskis Summit.
May 21, 2003	MNEPR Agreement signed in Stockholm by 10 European countries, the US, EBRD, EC, and Euratom.
June 1–3, 2003	G8 Summit in Evian, France. New Global Partnership documents adopted, including: the Senior Officials Group Annual Report on the G8 Global Partnership; the G8 Declaration on Nonproliferation of Weapons of Mass Destruction; the G8 Action Plan for the Global Partnership against the Spread of Weapons and Materials of Mass Destruction; G8 Statement on Nonproliferation of Weapons of Mass Destruction, Securing Radioactive Sources; G8 Action Plan for Nonproliferation of Weapons of Mass Destruction, Securing Radioactive Sources. The Global Partnership was also expanded for the first time, to include Finland, the Netherlands, Norway, Poland, Switzerland, and Sweden.
April 23–24, 2004	PIR Center and CSIS (Washington, DC) sponsor an international conference on the Global Partnership against the Spread of Weapons and Materials of Mass Destruction.
June 8–10, 2004	G8 Summit in Sea Island, the United States. Global Partnership documents adopted include: The Senior Group G8 Global Partnership Annual Report; the G8 Consolidated Report on Global Partnership Projects, and also a G8 Nonproliferation Action Plan. The partnership was expanded for a second time, to include Australia, Belgium, the Czech Republic, Denmark, Ireland, New Zealand, and South Korea.
February 24, 2005	U.S.-Russian Summit in Bratislava, Slovakia. A Joint Statement on Nuclear Security Cooperation is issued by Russian President Vladimir Putin and U.S. President George W. Bush.
July 6–8, 2005	G8 Summit in Gleneagles, Scotland (UK). Global Partnership documents adopted included: the Senior Group G8 Global Partnership Annual Report, and a G8 Statement on Nonproliferation.
January 1, 2006	Beginning of Russia's term as chair of the G8.

April 20–22, 2006	PIR Center will host the Moscow International Security Conference in the context of Russian G8 presidency "The G8 Global Security Agenda: Challenges and Interests. Towards the St. Petersburg Summit."
June 16, 2006	Expiration of the Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage, and Destruction of Weapons and the Prevention of Weapons Proliferation, which provides the legal basis for bilateral U.S.-Russian threat reduction activities.
July 15–17, 2006	G8 Summit in Russia.
2007	Germany holds G8 presidency.
2008	Japan holds G8 presidency.
2009	Italy holds G8 presidency.
2010	Canada holds G8 presidency.
2011	France holds G8 presidency.
2012	The United States holds G8 presidency.
2013	Expiration of the G8 Global Partnership according to the plan adopted at the 2002 G8 Kananaskis Summit.

## Further Reading

Cristina Chuen, "The G8 Global Partnership: Progress and Prospects," *Nonproliferation Review*, Vol. 12, No. 1 (March 2005), pp. 71–106.

Vladimir Orlov, Roland Timerbaev, and Anton Khlopkov, *Nuclear Nonproliferation Challenges in U.S.-Russian Relations: History, Opportunities, and Prospects for Future Cooperation* (Moscow: PIR Center, 2001), pp. 176–200.

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Vladimir Orlov, ed., *Nuclear Nonproliferation* (Moscow: PIR Center, 2002), Vol. 1, pp. 404–434; Vol. 2, pp. 420–53; 461–63.

Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear, Biological, and Chemical Weapons: An Action Agenda for the Global Partnership*, four volumes (Washington: Center for Strategic and International Studies, January 2003).

John M. Shields and William C. Potter, *Dismantling the Cold War: U.S. and NIS Perspectives on the Nunn-Lugar Cooperative Threat Reduction Program* (Cambridge, MA: MIT Press, 1997).



## Part 2. SPHERES OF COOPERATION

The G8 leaders designated the following areas as priorities for cooperative projects:

- destruction of chemical weapons;
- dismantlement of decommissioned submarines;
- elimination of fissile material;
- employment of former weapons scientists.

Russia's priorities within the framework of the Global Partnership are chemical weapons elimination and the comprehensive dismantlement of nuclear-powered submarines. This fact has been emphasized on multiple occasions by Russia's leadership, including the Russian president.

This choice is based on the fact that the scale of problems in these two areas is very high. Chemical weapons and especially decommissioned NPS pose great danger to environment.

### Vladimir PUTIN, President of the Russian Federation

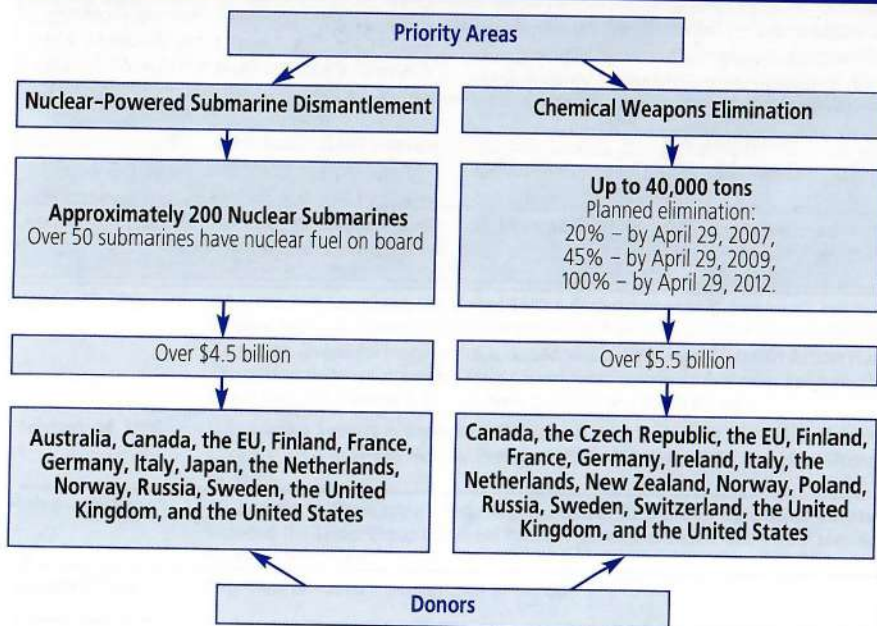
"We welcome the announcement of our partners on the possibility of allocating funds to projects outlined by the agreements in Kananaskis. We think that these statements should be supported by practical actions, above all by agreeing on projects for priority areas of the Global Partnership, such as eliminating chemical weapons and dismantling obsolete, decommissioned nuclear submarines."



These problems demand urgent measures, which will inevitably be very costly. In addition, international obligations under the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (CWC) force Russia to destroy all chemical weapons stockpiles by 2012.

Priority Areas for Global Partnership Cooperation

Figure 9



## Chemical Weapons Elimination

Already in 1985 the leadership of the USSR made the decision to build the first chemical weapons destruction facility (CWDF) in Chapayevsk, Samara region. The plant was built in less than two years from 1987 to 1989, but was never put into operation. The political, economic, and social changes in the USSR at the time, as well as public doubts about the safety and potential environmental impact of the facility, first caused the facility to be "frozen," and later to be realigned as a specialist training center.

**"First money for a sewage system, water treatment plant, water mains, and natural gas supply. First hospitals, clinics, road paving and a bridge over the Kama river. And only afterwards – a toxic agent elimination facility. Otherwise, it will be like in Chapayevsk."**

Vladimir Konyashin,  
Kambarka mayor (Udmurt Republic)

Russia signed the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (Chemical Weapons Convention, or CWC) in 1993, thus taking upon itself the international obligation to eliminate all of its chemical weapons stocks. After ratification by the necessary number of member states, the Convention entered into force in April 1997. Russia ratified the Convention on November 5, 1997.

There are several objective difficulties in the sphere of chemical weapons dismantlement that negatively affect Russia's ability to fulfill its CWC obligations. Despite the fact that the date by which Russia must eliminate its entire chemical weapons arsenal was postponed from 2007 to 2012, there are several reasons why fulfilling its CWC obligations remains an extremely difficult task for Russia. The principal reasons for this include:

- the vast quantity of stockpiled chemical weapons;
- increasing degradation of chemical munitions and storage facilities over time; and
- the colossal financial expenditures needed to realize the chemical weapons elimination program.

**Natalia KALININA, Deputy Inspector-General, Accounts Chamber of the Russian Federation (Assistant to the Prime Minister of the Russian Federation, 2003–2004)**



"It was precisely due to the great cost of chemical weapons elimination, which Russia could not support for economic reasons, that Russia's political declaration of its intention to completely eliminate its chemical weapons stockpiles, which it made when it signed the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction in 1993, was accompanied by an appeal to the global community to render assistance. At the time the Convention was signed, most countries regarded Russia's problems with understanding, and pledges were made (although without letters of commitment) by the leadership of the United States, the United Kingdom, France, the Federal Republic of Germany, and Italy to support Russia in obtaining solutions to Russia's problems in chemical weapons destruction that were acceptable to it. The realization of the pledges made in 1993 is occurring too slowly, and in amounts and under conditions that have themselves become one of the reasons not only for Russia's lengthy consideration of Convention ratification, but also for missing the deadlines for the fulfillment of several Convention obligations."

**Natalia Ivanovna KALININA**

*Deputy Inspector-General, Accounts Chamber of the Russian Federation. Assistant to the Prime Minister of the Russian Federation (2003–2004). Graduated from the Volgograd Medical Academy. Chief work experience related to ensuring the safety and nonproliferation of weapons of mass destruction. Has worked in the central bodies of the legislative and executive branches of government since 1993. Doctor of medical sciences, professor. Sphere of scientific interest: the nonproliferation of chemical and biological weapons, the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. Member of the PIR Center Advisory Board, member of the Board on Sustainable Partnership for Russia (SUPR), member of several doctoral dissertation defense committees in the area of toxicology. Author of numerous publications.*

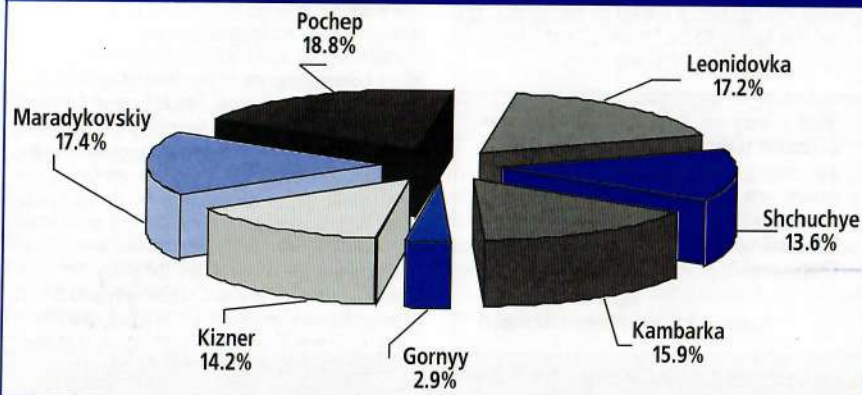


The total volume of Russian chemical weapons stockpiles (chemical warfare agents) is approximately 40,000 tons, which is stored in seven arsenals: 2.9% in Gornyy (Saratov region), 15.9% in Kambarka (Udmurt Republic), 14.2% in Kizner

(Udmurt Republic), 17.2% in Leonidovka (Penza region), 17.4% in Maradykovskiy (Kirov region), 18.8% in Pochev (Bryansk region), and 13.6% in Shchuchye (Kurgan region). The only operational destruction facility in Russia is located in Gornyy.

Geographic Distribution of Chemical Weapons Stockpiles in Russia

Figure 10



### The Management of the Chemical Weapons Elimination Process in Russia

Until March 2004 the federal executive agency ensuring the realization of government policy in the sphere of the munitions industry, special chemicals, and the elimination of chemical weapons was the Russian Munitions Agency. It was the state contractor for chemical weapons elimination work, as well as for work related to the liquidation or conversion of chemical weapons production facilities. The Munitions Agency was responsible for the organization and realization of activities to ensure the safe storage and destruction of chemical weapons. In order to implement the chemical warfare agent destruction program as quickly as possible, the Federal Directorate for the Safe Storage and Destruction of Chemical Weapons was established under the Russian Munitions Agency by Russian Government Resolution No. 87 of February 5, 2001.

In accordance with Russian Presidential Decree No. 314 *On the System and Structure of Federal Executive Bodies* of March 9, 2004, the Russian Munitions Agency was abolished, and its functions were

transferred to the newly formed Russian Federation Ministry of Industry and Energy, where a directorate entitled the Center for Conventional Problems and Disarmament Programs was created.

In the 2003 analysis of Natalia Kalinina, then assistant to the Russian prime minister, the total cost of chemical weapons destruction programs, taking inflation into account, will amount to approximately \$5.52 billion. Meanwhile, Russian federal financing for these programs has been insufficient from the start. Despite an increase in government appropriations for chemical weapons elimination, especially in the year 2005, it is clear that without financial assistance from foreign partners Russia may be unable to finance chemical weapons elimination fully in the next decade.

On March 21, 1996, the Russian Government approved the Federal Program "Destruction of Chemical Weapons Stockpiles in the Russian Federation." The program was supposed to run from 1995 to 2007, at a total cost of about \$5 billion.

However, the time period for program realization turned out to be unrealistic for economic

reasons. Due to the nonfulfillment of the program adopted in 1996, and Russia's resulting failure to meet its international obligations under the CWC, it became necessary to introduce several changes into the program. The second version of the program was approved by the Russian Federation Government on July 5, 2001, and included several conceptual changes. This version implied construction of only 3 full-scale destruction facilities and transportation of munitions and reactor products from one facility to another.

tions and reactor products from one facility to another.

The third version of the program appeared on July 21, 2005 and was amended on October 24, 2005. In this version no munitions transportation is presupposed. According to the third version of the program destruction facilities in Kambarka and the first phase of Maradykovskiy should be launched by early 2006, Shchuchye and Leonidovka – by 2008, and Kizner by 2009.

Table 5  
Comparison of the Three Versions of the "Destruction of Chemical Weapons Stockpiles in the Russian Federation" Program

Specifications	1996 Program	2001 Program	2005 Program
Scope of Obligations under the Convention	Destruction of chemical weapons stockpiles	CW stockpiles destruction. Elimination/conversion of CW production facilities. International/national monitoring of CWC implementation	CW stockpiles destruction. Elimination/conversion of CW production facilities. International/national monitoring of CWC implementation
Realization Period	1995–2007	2001–2012	2005–2012
Quantity of Full-Scale CW Destruction Facilities to be Constructed	7 facilities. The full cycle of chemical agent processing was anticipated at each CWDF	3 full-scale and 3 detoxification facilities. Chemical treatment of reaction products to be accomplished at existing industrial facilities	7 facilities. The full cycle of chemical agent processing at each facility
Chemical Munitions Transport	None	Transport of chemical warfare munitions from Kizner for elimination at Shchuchye or elsewhere	None
Social Assets	The full-scale creation of infrastructure to provide for the permanent residence of personnel at all 7 CW elimination facilities	Rotation of personnel by shifts, minimal expenditures on social infrastructure	The full-scale creation of infrastructure to provide for the permanent residence of personnel at all 7 elimination facilities

Source: Official Website of the Russian Munitions Agency, <http://www.munition.ru/rus/compare.html>



Table 6

## Chemical Weapons Elimination: Volume and Spheres of International Cooperation

Country	Funding Commitments	Funds Expended under Global Partnership	Spheres of Cooperation
Canada	C\$ 43.4 million	C\$4.47 million expended as of May 2005	<ul style="list-style-type: none"> <li>Railway construction in Shchuchye</li> <li>Infrastructure construction in Shchuchye</li> <li>Support to Green Cross International to operate Izhevsk Public Information and Outreach Office</li> </ul>
Czech Republic	\$225,000 (financed through the United Kingdom's bilateral agreement with Russia)	\$225,000	<ul style="list-style-type: none"> <li>Construction of electrical substation in Shchuchye</li> </ul>
European Union	€14 million	\$7.56 million	<ul style="list-style-type: none"> <li>Projects at Gornyy</li> <li>Equipment for an electric substation at Shchuchye</li> <li>Information and technical assistance for CW elimination</li> <li>Projects at Kambarka</li> </ul>
Finland	€1,850,000 for 2003–2006	€1 million	<ul style="list-style-type: none"> <li>Construction of technical control system for the safe storage of lewisite at Gornyy</li> <li>Provision of similar system for storage of lewisite at Kambarka</li> <li>Support to Green Cross International</li> </ul>
France	Up to €6 million by 2007	–	<ul style="list-style-type: none"> <li>Environmental survey of Shchuchye CWDF</li> </ul>
Germany	€300 million	€140 million through 2006 (planned) €68.6 million expended as of December 2004	<ul style="list-style-type: none"> <li>Construction of Gornyy CW elimination facility.</li> <li>Construction of support infrastructure at Gornyy.</li> <li>Construction of CW elimination facility at Kambarka</li> </ul>
Italy	€372.7 million	€7.7 million	<ul style="list-style-type: none"> <li>Design and construction of CW elimination facility at Pochep</li> <li>Construction of gas pipeline and other infrastructure at Shchuchye</li> </ul>

Netherlands	€11.4 million	€2.2 million in 2002 €4 million obligated in 2003	<ul style="list-style-type: none"> <li>Modernization of electrical substation at Kambarka CWDF, in cooperation with Switzerland</li> <li>Construction of transformer station in Gornyy</li> </ul>
New Zealand	NZ\$1.2 million (US \$780,000)	In 2005, New Zealand plans to contribute £20,000–£50,000	<ul style="list-style-type: none"> <li>Infrastructure construction in Shchuchye through the UK program</li> </ul>
Norway	€2 million	\$500,000	<ul style="list-style-type: none"> <li>Provision of electrical equipment to Shchuchye</li> </ul>
Poland	400,000 zloty (\$100,000)	400,000 zloty (\$100,000)	<ul style="list-style-type: none"> <li>Research, design, production, and supply of special equipment, development of technology for purification of water and extraction of arsenic in treating reaction products generated during lewisite destruction</li> <li>Creation of the Polish-Russian Technological Park at Tarnow, Poland</li> </ul>
Sweden	€222,000	€222,000	<ul style="list-style-type: none"> <li>Green Cross project, 2005–2006</li> </ul>
Switzerland	CHF 15 million, 2002–2007	CHF 5.96 million as of June 2005	<ul style="list-style-type: none"> <li>Sanitary and hygiene monitoring system in Shchuchye</li> <li>Reconstruction of electrical substation in Kambarka</li> <li>Support to Green Cross International offices in Kirov, Penza, and Pochep; co-financing of annual National Forum in Moscow</li> </ul>
United Kingdom	\$100 million	\$10 million in 2003 \$6 million in 2002	<ul style="list-style-type: none"> <li>Construction of water and power infrastructure for Shchuchye CWDF</li> <li>Railway construction at Shchuchye</li> </ul>
United States	\$540.069 million through September 2005; in addition the Nuclear Threat Initiative, a Washington-based NGO, is contributing \$1 million	\$159.723 million as of September 2004	<ul style="list-style-type: none"> <li>Construction of Shchuchye CWDF</li> <li>Demilitarization of production facilities in Volgograd and Novocheboksarsk</li> <li>Security enhancements in Planovyy and Kizner</li> </ul>

Sources: Table "Financial Assistance by Donor States to the Russian Program for the Elimination of Chemical Weapons," Russian Munitions Agency Website, [www.munition.ru](http://www.munition.ru); Regions.ru, October 29, 2003; Agreement between the Russian Federation Government and the Government of the Republic of Italy on Cooperation in the Elimination of Stockpiles of Chemical Weapons in the Russian Federation, November 6, 2003; Natalia Kalinina, "The Effectiveness of the Chemical Weapons Convention Depends on Russian Actions," *Yadernyy Kontrol*, No. 1 (Spring), 2003, pp. 89–123; "Global Partnership Working Group Annual Report 2005, Consolidated Report Data," [www.fco.gov.uk/Files/efile/PostG8\\_Gleneagles\\_GWPAnnualReport2005.pdf](http://www.fco.gov.uk/Files/efile/PostG8_Gleneagles_GWPAnnualReport2005.pdf).





**Natalia KALININA, Deputy Inspector-General, Accounts Chamber of the Russian Federation (Assistant to the Prime Minister of the Russian Federation, 2003–2004)**

"Russia has the largest inventory of chemical weapons in the world, totaling more than 40,000 tons. Without international assistance, eliminating this stockpile within the stipulated time period would be impossible. This is a serious problem for the environment as well, and all countries, particularly Western countries, should be interested in Russia's freeing itself of this burden inherited from the Cold War as quickly as possible."

The yearly amount of financing in 2003 and 2004 was 5.4 billion rubles. In 2005 Russia doubled federal financing for chemical weapons destruction to 11.16 billion rubles, or about \$400 million.

The first international document that supported cooperation in banning CW was the MOU between the Soviet Union and the United States on a bilateral verification experiment and data exchange related to the prohibition of CW, signed in Wyoming on September 23, 1989. The basis for international assistance programs in the CW sphere was laid on June 1, 1990 with the signing of the bilateral Agreement on Destruction and Non-Production of Chemical Weapons and on Measures to Facilitate the Multilateral Convention on Banning Chemical Weapons. Although the agreement never entered into force, these documents formed the basis for deliberations within the United States over the provision to Russia of grant assistance for the elimination of existing chemical weapons stockpiles. In 2005, the following countries provided assistance to Russia in the sphere of CW elimination Canada, the Czech Republic, the EU, Finland, Germany, Italy, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, the United Kingdom, and the United States.



**Sergei KIRIENKO, Head of the Federal Atomic Energy Agency, Chief of the State Commission for Chemical Disarmament**

"The chemical weapons amassed by humanity have no nationality... we are erecting CWDFs. What we are really building there is security, building trust."

The first practical result in the area of chemical weapons disarmament was the startup of the chemical weapons destruction facility in Gornyy (Saratov region), built with the assistance of Germany, Finland, the Netherlands and the EU. In April 2003, the Gornyy plant destroyed the first 400 tons of mustard gas, equal to 1% of all Russian chemical weapon stockpiles. By December 2005 this facility destroyed 1,143 tons of chemical agents. Thus, Russia managed to meet its current obligation under the CWC.

### Current State and Prospects for Chemical Disarmament

The G8 summits served as a further stimulus towards increasing funding committed to chemical weapons elimination programs. New funding was allocated for the construction of a chemical weapons destruction facility in Kambarka (Udmurt Republic) and for projects to develop industrial infrastructure for a facility in Shchuchye (Kurgan region). Russia also suggested that its foreign partners assist in the construction of other facilities. German partners are considering the possibility of working at Leonidovka (Penza region), and Italy is considering the option of working at Pochep (Bryansk region). The only exception is a destruction facility in Maradykovskiy (Kirov region), where Russia works without foreign donors.

At the same time, the amount of funding Russia had received by 2004 for chemical weapons elimination projects was not enough to enable Moscow to meet its CWC obligations. As of the end of 2004, Russia had received \$217 million, which is less than 5% of the cost of the CW elimination program. Given the current rate of CW destruction, Russia needs to receive the bulk of assistance for the CW elimination programs by 2007. However, several donor countries are not yet rushing to increase their assistance programs in this sphere (for example, the European Union only plans to increase its assistance after the beginning of the new budget cycle in 2007).

Given the above, it is clear that international assistance for chemical weapons destruction played a positive role to help Russia meet its international obligations under the Chemical Weapons Convention. However even bigger assistance is needed in the critical period of 2006–2008.

### Further Reading

Natalia Kalinina, "The Effectiveness of the Chemical Weapons Convention Depends on Russian Actions," *Yaderny Kontrol*, No. 1 (Spring), 2003, pp. 89–122.

Yury Fedorov, ed. "Cooperation in the Name of Global Security," *PIR Center Study Papers*, No. 19, 2002, pp. 126–144.

## Nuclear Submarine Dismantlement

### The Scale of the Problem

Between December 1958, when the USSR commissioned its first nuclear-powered submarine, and today the Soviet Union and Russia created the world's largest nuclear-powered fleet. Approximately 250 nuclear-powered submarines of various types were constructed, including 91 nuclear-powered ballistic missile submarines (SSBNs); several nuclear-powered cruisers, icebreakers, and communications ships; as well as various fueling and other service vessels. In addition to SSBNs, the USSR

and Russia built and continue to build so-called multipurpose nuclear-powered submarines, designed to attack potential enemy fleets or serve several other purposes.

Until the mid-1980s, the USSR had no shipyards capable of fully dismantling nuclear-powered submarines in a safe manner, and the problems of how to process radioactive wastes and securely handle spent nuclear fuel (SNF) had not been solved. By the early 1990s the service lives of nuclear-powered submarines built in the 1960s and 70s were coming to an end, but the Soviet Union and then Russia had neither the technical nor the financial ability to dismantle them. The Russian economy was then in crisis, and the mass decommissioning of nuclear submarines aggravated the situation still further.

As of January 1, 2005, Russia had decommissioned 194 nuclear-powered submarines. Only 107 of them have been dismantled. Of the remaining boats, approximately 50 continue to have highly enriched uranium fuel on board, with enrichment levels of 20–90%.

Figure 11

### Decommissioning and Dismantlement of Russian Nuclear Submarines

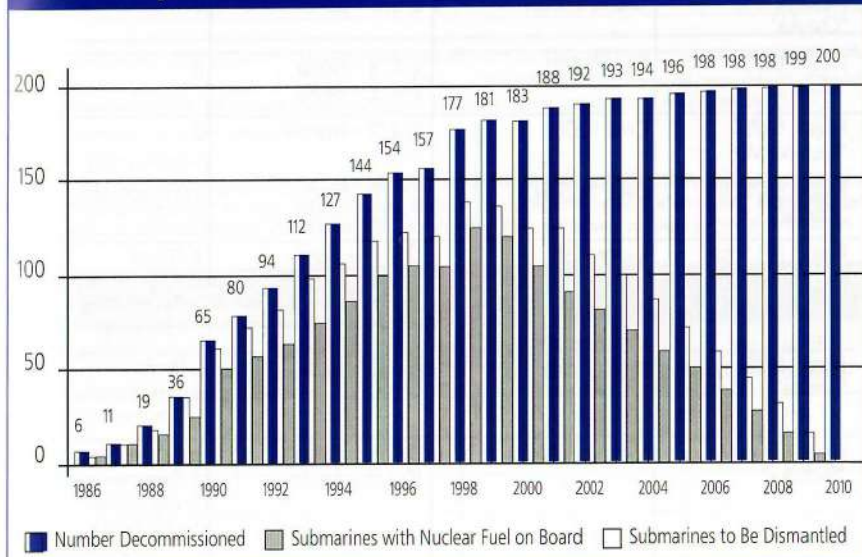




Table 7

## Status of Decommissioned Russian Nuclear Submarines

Russian Designation	NATO Designation	Number Decommissioned/ Defueled/ Dismantled	Number Awaiting or Under Dismantlement/ Location
Project 659	Echo I	5/3/3 – Pacific	1/Sovetskaya Gavan 1/Chazhma
Project 675	Echo II SSGN	15/11/8 – North 14/6/1 – Pacific	1/Nerpa 4/Ara Bay 4/Pavlovsk Bay 5/Chazhma* 4/Vilyuchinsk
Project 658	Hotel SSBN	6/5/4 – North 2/1/1 – Pacific	1/Ara Bay 1/Nerpa 1/Vilyuchinsk
Projects 627, 627A	November SSN	8/6/4** – North 5/2/1 – Pacific	2/Polyarninskiy 1/Gremikha 2/Sovetskaya Gavan 1/Chazhma 1/Vilyuchinsk
Project 670 "Skat"	Charlie I	11/5/0 – Pacific	8/Vilyuchinsk 3/Pavlovsk
Project 670M "Chayka"	Charlie II SSGN	6/6/6 – North	0
Project 667B "Murena"	Delta I SSBN	9/8/8 – North 9/8/8 – Pacific	0
Project 667BD "Murena-M"	Delta II SSBN	4/4/4 – North	0
Project 667BDR "Kalmar"	Delta III SSBN	2/2/2 – North 7/4/4 – Pacific	3/Vilyuchinsk
Project 671 "Ersh"	Victor I SSN	12/5/3 – North 3/2/0 – Pacific	4/Nerpa 3/Polyarninskiy 2/Zvezdochka 3/Chazhma*
Project 671RT "Semga"	Victor II SSN	7/7/2 – North	1/Nerpa 3/Polyarninskiy 1/Zvezdochka
Project 671RTM "Shchuka"	Victor III SSN	11/5/5 – North 10/1/0 – Pacific	2/Polyarninskiy 4/Severodvinsk 7/Vilyuchinsk 3/Chazhma

Russian Designation	NATO Designation	Number Decommissioned/ Defueled/ Dismantled	Number Awaiting or Under Dismantlement/ Location
Project 667A "Navaga"	Yankee SSBN	19/18/16 – North 11/8/8 – Pacific	2/Nerpa 1/Zvezdochka 2/Chazhma 1/Pavlovsk
Project 661 "Anchar"	Papa SSGN	1/0/0 – North	1/Sevmash***
Project 705 "Lira"	Alfa SSN (metal-cooled reactor)	8/4/6 – North	2/Zaozersk
Project 971 "Shchuka-B"	Akula SSN	1/0/0 – North 2/2/0 – Pacific	1/Gadzhiiyev 2/unknown Pacific
Project 949 "Granit"	Oscar I SSGN	2/2/0 – North	2/Zvezdochka
Project 949A "Antey"	Oscar II SSGN	2/1/1 – North 2/0/0 – Pacific	1/Zvezdochka 2/Vilyuchinsk
Project 945 "Barracuda"	Sierra I	2/0/0 – North	2/unknown North
Project 941 "Akula"	Typhoon SSBN	3/1/1 – North	1/unknown North 1/Sevmash
TOTAL		118/85/70 – North, 81/42/26 – Pacific****	46 – North 55 – Pacific

Source: This table was compiled by Cristina Chuen, senior research associate, CNS, Monterey Institute of International Studies.

\* Two Pacific Fleet submarines, Project 675 Hull No. 175 and Project 671 Hull No. 610, have damaged cores and cannot be defueled. Current plans call for the creation of a sarcophagus to isolate the reactor compartments in a coastal shelter.

\*\* One November-class submarine sank in 2003.

\*\*\* Currently being defueled.

\*\*\*\* Rosatom Deputy Director Sergei Antipov said in April 2004 that 76 Pacific Fleet submarines had been decommissioned, 48 defueled, and 33 dismantled. However, the authors have not been able to determine exactly which vessels, at what locations, have been defueled or dismantled in the past few years, and therefore could not provide complete up-to-date information.

Table 8

## Main Achievements in Submarine Dismantlement

Number of Submarines	January 1, 1986 – December 31, 1998	January 1, 1999 – December 31, 2003	Total as of November 2005
Decommissioned	177	16	195
SNF unloaded	53	70	145
Dismantled	39	55	122
Awaiting dismantlement	138	99	73



Issues related to the safe storage and handling of SNF and radioactive wastes are the primary reasons that comprehensive nuclear submarine dismantlement was made a Global Partnership priority. Since many of the boats were decommissioned 15-20 years ago, the radioactivity of their nuclear fuel has decreased considerably, and can no longer be considered "self-protecting." This fuel has come to represent a danger from the point of view of nuclear materials proliferation. The nuclear fuel unloaded from submarines in the past that is being stored at on-shore bases is an even greater problem. It is being stored in unsatisfactory conditions both with respect to the environment and where its physical security is concerned. In addition, these on-shore bases house an enormous quantity of radioactive wastes created during the course of dismantlement as well as regular submarine operations. According to experts, solving all of the problems related to submarine dismantlement will cost up to \$4.5 billion.



**Sergei ANTIPOV, Deputy Director of the Russian Federal Atomic Energy Agency**

"The problems related to decommissioned nuclear-powered submarines can be divided into two groups. Problems related to the proliferation of nuclear materials and environmental issues. The radioactivity of the materials contained in decommissioned submarines and at on-shore technical bases totals hundreds of millions of Curies. To compare, this is equivalent to several times the emissions caused by the Chernobyl catastrophe."

#### Sergei Viktorovich ANTIPOV

Deputy Director of Russia's Federal Atomic Energy Agency. In 2003-2004, Russian Deputy Minister of Atomic Energy. Coordinates the realization of agency policy in the areas of environmental protection and ensuring the environmental safety of hazardous facilities in the nuclear sphere; nuclear facility decommissioning; handling radioactive wastes and spent radioactive sources; the comprehensive dismantlement of nuclear-powered submarines, nuclear-powered surface ships, and nuclear service ships, and the creation of the necessary on-shore infrastructure for the storage of radioactive wastes; the rehabilitation of Russian Navy territories and aquifers contaminated with radiation over which the Agency has been given supervisory powers; as well as international coopera-

tion in specified areas, including nuclear submarine dismantlement projects under the Global Partnership.

#### Nuclear Submarine Dismantlement Procedures

In 1986 the Soviet leadership established formal procedures for the decommissioning and dismantlement of nuclear-powered submarines. This process included the following stages:

- decommissioning (unloading weaponry, reduction of crew, relocation to long-term anchorage site, etc.);
- spent nuclear fuel unloading, storage for three years at Navy storage facilities, and its subsequent transfer for storage and reprocessing at the Mayak Plant;
- missile compartment dismantlement (elimination of SLBM launchers);
- decontamination;
- dismantlement (chopping), separation of reactor compartment (and adjoining compartments into a three-compartment section) and dismantlement of "clean" compartments; and
- transport of three-compartment sections to temporary storage site with radiation safety monitoring.

This procedure has been maintained to the present day. In July 1992, the Russian Government adopted Resolution No. 514, *On Measures Related to the Arrangement of the Trial Dismantlement of Decommissioned Submarines and Surface Ships*. In accordance with this resolution, the trial scrapping of nine submarines was effected. The Russian Navy unloaded their fuel, and then transported them to dismantlement facilities. The three-compartment sections (or, in some cases, sections consisting of more compartments) were returned to the Russian Navy, which was responsible for their safe storage. All of the reactor sections were transported to the Russian Navy's facility at Sayda Bay, on the Kola Peninsula, for floating storage.

In accordance with Russian Government Resolution No. 518 of May 28, 1998, the coordination of nuclear submarine dismantlement was transferred to the Ministry of Atomic Energy (which was reorganized as the Federal Atomic Energy Agency in March 2004 – referred to here-

after as Rosatom), which relieved the Russian Navy of extrinsic functions.

Since 1998, when it became the state contractor for nuclear submarine dismantlement work, Minatom (then Rosatom) has conducted work in two areas:

- the coordination and funding of the comprehensive dismantlement of decommissioned nuclear-powered submarines and nuclear service ships (floating technical bases, special tankers, and waste storage and transport vessels);
- the safe maintenance, transport and conditioning of SNF and radioactive wastes from former Russian Navy on-shore technical bases.

Minatom actually began nuclear submarine dismantlement work in the beginning of 1999. Up to that point, the average speed of submarine defueling was four submarines per year. The following measures were undertaken in order to increase this pace:

- regular maintenance of functional service ships;
- reconditioning of old service ships; and

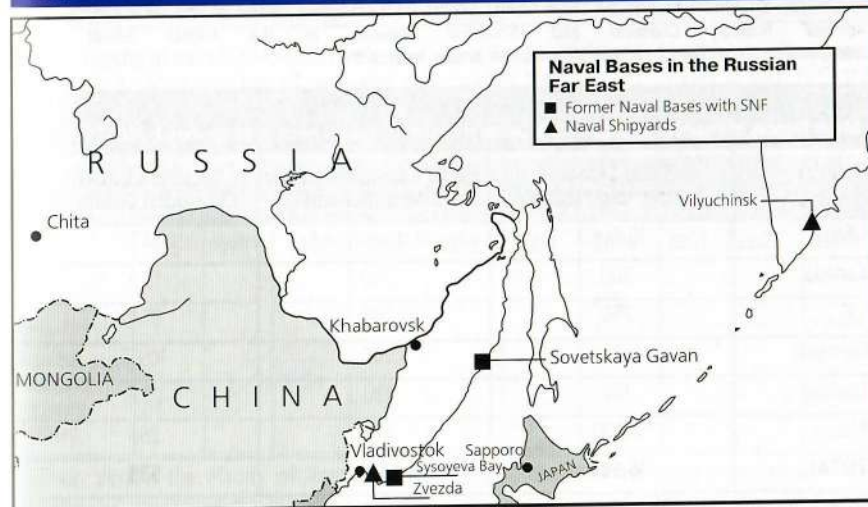
- the design and implementation of a plan to engage Murmansk Shipping Company service ships used to service nuclear-powered icebreakers.

In addition, construction of two on-shore submarine defueling facilities was completed in 2001: at Zvezdochka Shipyard in Severodvinsk (Arkhangelsk region) and Zvezda Shipyard in Bolshoy Kamen (Primorsky Krai). Today, eight shipyards have been officially designated as nuclear submarine dismantlement facilities:

- Nerpa Shipyard (Murmansk region);
- Zvezdochka State Unitary Enterprise (Arkhangelsk region);
- Polyarninskiy Shipyard (Murmansk region);
- Sevmash State Unitary Enterprise (Arkhangelsk region);
- Chazhma Shipyard (Primorsky Krai);
- Zvezda Shipyard (Primorsky Krai);
- Sevmorput Joint Stock Company (Murmansk region); and
- Vilyuchinsk Shipyard (Kamchatka region).

**Figure 12**

#### Naval Bases and Facilities in the Russian Far East



Sources for locations: Mr. Antipov's Presentation at the G8 Global Partnership Workshop "Making the World More Secure," Tokyo, Japan, June 7, 2005, and Strategic Geography 2004/2005, "Russia's Naval Nuclear Legacy," page XVII.



## Naval Bases and Facilities in Northwest Russia

Figure 13



Source: The G8 Global Partnership. First Annual Report 2003: Progress Report on the UK's Programme to Address Nuclear, Chemical and Biological Legacies in the Former Soviet Union, [http://www.dti.gov.uk/energy/nuclear/tsu/news/First\\_annual\\_report.pdf](http://www.dti.gov.uk/energy/nuclear/tsu/news/First_annual_report.pdf).

Table 9

## Major Donors of Projects Related to NPS Comprehensive Dismantlement as of January 1, 2005 (\$ million)

Country	Total Global Partnership Pledge	For NPS Comprehensive Dismantlement	Amount Under Concluded Contracts
USA	10,000	not determined	86.0
Canada	800	250	19.3
UK	750	200	31.4
Germany	1,900	380	109.7
Norway	130	130	22.6
Russia	2,000	600	266
<b>TOTAL:</b>	<b>15,580</b>	<b>1,560</b>	<b>535</b>

Source: Sergey Antipov's Presentation at the Global Partnership Workshop "Making the World More Secure," Tokyo, Japan. June 7, 2005. Abridged version. The presentation included also Australia, Belgium, France, Italy, the EU, the Netherlands, Sweden.



**Sergei ANTIPOV, Deputy Director of the Russian Federal Atomic Energy Agency**

"In 1998 there were only three functioning service ships that could unload fuel.

There was only one specialized [fuel transport] train. There were no temporary sites for SNF container storage. Together this meant that the maximum speed was the dismantlement of 3–4 boats per year. That is, in order to dismantle all of the submarines, 50–60 years would be needed. This problem lay on the shoulders of the Defense Ministry. It is clear that the Defense Ministry's main goal is maintaining the nation's defense capabilities, and not undertaking the industrial processes of dismantlement. Therefore, all of these factors combined to create the situation in which we found ourselves in 1998. At that time 177 boats had been decommissioned. Only 53 of them had been defueled. And only 39 had been dismantled. That is, we had 138 submarines in floating storage, of which 124 had fuel on board.

Therefore, in May 1998 the Russian Government issued a special resolution to change and improve the nuclear submarine dismantlement situation. That was the well-known Resolution No. 518. This Resolution designated Minatom as the state contractor and coordinator for dismantlement issues. Eight shipyards were designated

dismantlement facilities: five facilities in the north, and three in the east. And overall procedures for the cooperation of agencies taking part in dismantlement were spelled out. This document was critical to the solution of submarine dismantlement problems.

Minatom, having analyzed the situation, developed a document called "The Complex Nuclear Submarine Dismantlement and Russian Navy On-Shore Technical Base Rehabilitation Concept." This concept was approved by all interested agencies and brought into action by a government mandate. The concept envisaged the attainment of two goals first and foremost: decreasing the likelihood, and where possible completely eliminating the possibility, of nuclear and radiation incidents, and secondly, fulfilling the international obligations Russia had taken upon itself in the area of nuclear materials nonproliferation, nuclear weapons reductions, and countering international terrorism. In order to meet these goals two main tasks were set: the complex dismantlement of decommissioned nuclear-powered submarines and surface ships. And the second task was the environmental rehabilitation of sites on land, that is, on-shore bases. In analyzing this situation, a critical component was identified and selected for particular attention: the necessity of unloading spent nuclear fuel."

With the transfer of the role of NPS dismantlement coordination to Minatom, the process sped up considerably (see Table 10). At the current time there is a centralized system to select a particular

boat for dismantlement. Rosatom possesses a data base on the current conditions of each NPS; the decision as to which boats will be a dismantlement priority is based on this information.

Table 10

Submarine Defueling and Formation of Reactor Sections										
Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number of submarines defueled	3	5	3	1	8	18	18	14	12	17
Number of reactor sections formed	5	7	5	2	6	12	7	17	13	unknown

However, despite the efforts of Rosatom, the infrastructure to completely dismantle nuclear submarines does not yet exist in either the North or the Russian Far East. Facilities for the long-term on-shore storage of reactor compartments do not

exist (to date they are being stored afloat in the form of three-compartment sections), nor is there the infrastructure needed for the handling, treatment, and storage of SRW created during the dismantlement of NPS and nuclear service ships.





**Sergei ANTIPOV, Deputy Director of the Russian Federal Atomic Energy Agency**

"I must say that until the early 1990s Russia had absolutely no regulatory and legal framework for the implementation of the dismantlement process. There was no special industrial infrastructure for undertaking dismantlement. All of the existing industry was designated for the construction, operation and repair of vessels with nuclear propulsion plants. And even this was in seriously bad repair."

### Funding

As was indicated above, nuclear submarine dismantlement consists of six main stages. Comprehensive dismantlement also incorporates the creation and maintenance of all infrastructure for submarine dismantlement, defueling, spent nuclear fuel transport, etc.

According to the data of Zvezdochka Shipyard General Director Nikolai Kalistratov, unloading the SNF from one submarine using an on-shore defueling complex costs about \$1.5 million, while the dismantlement process (that is, cutting up a boat's front and stern and preparing the reactor compartment for storage as part of a three-compartment section) an additional \$6 million. According to other information, the dismantlement of a defueled nuclear submarine in a dry dock costs \$4.25 million. But these figures only relate to strategic submarines in good working order that have not suffered any accident. Costs of defueling reactors that have deteriorated over time are higher. The problem is made more difficult by the fact that several nuclear submarine reactors are damaged and can no longer be defueled.

One must also take the expenditures on modernizing defueling ships and other nuclear maintenance vessels, on destroying SLBM launchers, and on repairing shipyard equipment and infrastructure critical to the dismantlement process into consideration. Thus the cost of dismantling one SSBN may increase to about \$10–15 million. Nevertheless, nuclear submarine dismantlement in Russia is cheaper than in the United States, where the dismantlement of one submarine costs, according to some estimates, from \$20–40 million.

Initially, Russia only received foreign assistance for projects entailing the dismantlement of ballistic missile submarines.

At the same time, there was always an urgent need of assistance programs for the dismantlement of other types of submarines and nuclear service ships. The signing of the Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) Agreement in Stockholm on May 21, 2003, was a critical achievement in this regard. The MNEPR Agreement regulated several legal issues related to the provision of foreign financial assistance, including questions of taxation and liability for nuclear damages. Thus, obstacles to the broadening of assistance programs in the area of nuclear submarine dismantlement were removed (in part, enabling European states to fund such programs).

Russia has pressed for the MNEPR Agreement to serve as a "reference point" for the drafting of bilateral agreements under the Global Partnership. However, this view is not welcomed by all of the donor countries. And as noted earlier, the United States did not sign the Liability Protocol to the MNEPR Agreement. The MNEPR Agreement was ratified by the Russian State Duma on November 28, 2003.

The existence of MNEPR has also allowed the EBRD's Northern Dimension Environmental Partnership (NDEP) projects to move forward. The first major NDEP project was the creation of a Strategic Master Plan for Northwest Russia, which provides an analytical overview of the current state of dismantlement activities in the northwest, as well as their legal and regulatory framework. Next, the NDEP undertook a Strategic Environmental Assessment in the Russian Northwest. Most recently, in October 2005, an agreement was concluded to begin stage two of the Strategic Master Plan (a €7 million contract). This stage includes the development of an overall regional decommissioning and dismantlement plan and project development. Concrete projects are also beginning, thanks to the signing on July 7, 2005 of the Agreement on the Provision of Technical Assistance to the Russian Federation in Implementing Projects under the Multilateral Nuclear Environmental Program in the Russian Federation between Rosatom and the EBRD.

Priority NDEP projects include the creation of safe conditions for storage and unloading of SNF (from Alfa class submarines) in Gremikha, a feasibility study for the removal of SNF and SRW from Gremikha's open storage area, a feasibility study for making the existing WWR SNF storage facilities at Gremikha safe, the improvement of physical protection at Gremikha (these four projects, run by SevRAO, total €7 million), and work on a radiation monitoring and emergency response system for Murmansk region (for which NDEP is providing €5.1 million to the Murmansk region government).

### Vladimir PUTIN, President of the Russian Federation

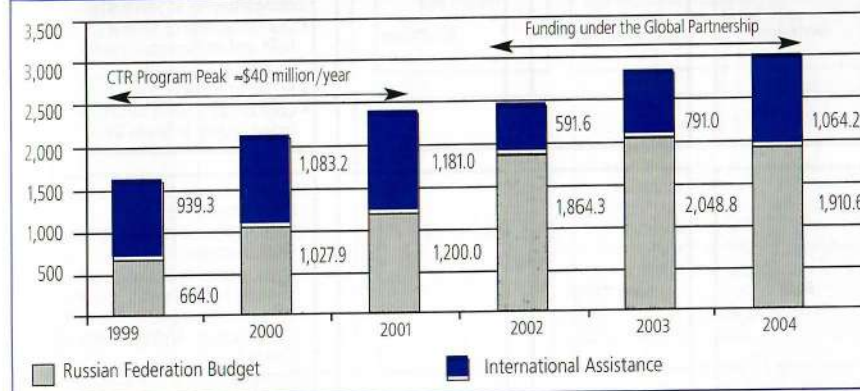


"The State Duma's ratification of the Multilateral Nuclear Environmental Program is a serious step towards the solution of Russia's nuclear waste disposal problems. It opens the possibility of starting practical work. I understand that contracts totaling \$100 million have already been signed with foreign partners. Russia, of course, believes that this is primarily our own responsibility, and we are allocating the resources that we are able to allocate to these goals. In 2003 we allocated 2 billion rubles."

At present the fundamental technical problems facing submarine dismantlement are caused by the lack of necessary funding. Among them are:

- the lack of specially equipped on-shore facilities for long-term (50–70 year) reactor compartment storage;
- problems related to the treatment of liquid (LRW) and solid radioactive wastes (SRW). Submarine dismantlement results in a great quantity of LRW and SRW that is left in storage facilities for a lengthy period of time. Today these facilities are obsolete and in poor physical condition, and the wastes stored in unsatisfactory conditions. Rosatom has made a considerable effort lately to normalize the situation involving the handling of LRW and SRW. For instance, an on-shore LRW treatment complex at Zvezdochka Shipyard and the Landysh floating LRW treatment facility at Zvezda, constructed with foreign assistance, were commissioned. Simple installations for sorting SRW and packing it into containers were built too, and mobile LRW treatment installations created. All of this made it possible to treat all LRW resulting from nuclear submarine dismantlement, and to begin to reduce the amounts accumulated earlier. Nonetheless the situation remains far

**Figure 14**  
Russian Government and International Funding of Submarine Dismantlement (in millions of rubles)



Source: Report by Russian Federation Deputy Minister of Atomic Energy Sergei Antipov at the international conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," Moscow, April 23, 2004.



Table 11

Nuclear Submarine Dismantlement: Amount and Areas of International Cooperation<sup>5</sup>

Country	Funding Commitments	Funds Expended	Areas of Cooperation
Australia	\$7.75 million	—	• Dismantlement of one submarine in the Russian Far East
Belgium	\$651,000	—	• NDEP projects
Canada	C\$ 300 million	C\$ 42.7 million as of May 2005	• Dismantlement of 9-12 submarines • NDEP projects
Denmark	€10 million	€10 million	• Donation to NDEP
European Union	€50 million	€50 million	• Donation to NDEP for 2002-2006
Finland	€10 million	€10 million	• Donation to NDEP
France	Total funding for submarine dismantlement not determined	€40 million	• Donation to NDEP (€40 million) • Rehabilitation of Gremikha on-shore technical base (€6-8 million in 2005)
Germany	€300 million	\$50 million	• Modernization of Nerpa Shipyard • Construction of a long-term on-shore interim storage facility for 120 reactor compartments at Sayda Bay • Dismantlement of several submarine hulls and multicompartments units floating at Sayda Bay • Repair of <i>Pallada</i> floating dock • Creation of an environmental monitoring system at Sayda Bay
Italy	€360 million	—	• Construction of regional radioactive waste storage facility • Construction of regional facility for SRW treatment • Physical security at 5 shipyards involved in submarine dismantlement in Russian North, as well as at the on-shore bases of Andreyeva Bay and Gremikha • Dismantlement of the <i>Admiral Ushakov</i> nuclear missile cruiser

<sup>5</sup> This table does not include funds expended prior to the initiation of the Global Partnership Program at the G8 Kananaskis summit on June 27, 2005.

Japan	\$100 million	\$5 million	• Dismantlement of Victor III class submarine • Planned dismantlement of 5 submarines in 2005-2006
Netherlands	€10 million	€10 million	• Donation to NDEP
Norway	\$100 million	\$19 million	• Dismantlement of 3 submarines (about \$15 million) • Rehabilitation of Andreyeva Bay base (about €3.2 million) • Construction of 4 special railcars for SNF transport • NDEP projects (€10 million donation) and dismantlement of the Lepse nuclear fuel service ship
Russia	about \$500 million	1.9 billion rubles	• Yearly expenditures of \$65-70 million • Donation to NDEP: €10 million
Sweden	Total funding for submarine dismantlement not determined	€10 million and \$400,000	• SRW handling at Andreyeva Bay (\$500,000) • NDEP Projects (€10 million)
United Kingdom	\$100 million	\$48 million	• Dismantlement of 2 submarines • Construction of temporary SNF storage facility at Atomflot • SNF storage at Andreyeva Bay • NDEP projects
United States	\$457 million	\$10 million	• SSBN dismantlement (16 by 2012) • MPC&A improvements • Construction of 2 on-shore SNF unloading facilities • Construction of a temporary SNF storage facility at Mayak Plant • Fabrication of SNF storage containers • Construction of special railcars for SNF transport • Construction of SRW treatment installation at Polyarninskiy

Sources: Cristina Chuen, "Russian Submarine Dismantlement Issues," CNS Website, <http://cns.miis.edu/pubs/week/031203.htm>; The G8 Global Partnership Progress Report on the UK's Programme to Address Nuclear, Chemical and Biological Legacies in the Former Soviet Union; ITAR-TASS, January 9, 2004; information from the websites of the NDEP ([www.ndep.org](http://www.ndep.org)) and Rosatom ([www.minatom.ru](http://www.minatom.ru)).



Table 12

**Submarine Dismantlement: Contracts Awarded and Funds Received by Russia (June 2002 – April 2004)**

Country	Contracts Awarded (in millions)	Funds Received by Russia (in millions)
Germany	\$30.7	\$4.1
Japan	\$6.7	\$2.1
Norway	\$17.5	\$12.0
Sweden	\$0.5	\$0.2
United Kingdom	\$23.2	\$3.2
United States	\$23.8	\$28.1
Russia	\$138.1	\$100.8

Source: Report by Russian Federation Deputy Minister of Atomic Energy Sergei Antipov at the international conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," Moscow, April 23, 2004.

from adequate, particularly with regards to SRW handling, conditioning, treatment, and storage. Russia's Kola Science Center has completed a study of possible locations for long-term SRW storage in Northwest Russia; the Russian Government may designate a location (of the three that have been recommended) for storage facility construction to proceed.

The current levels of actual funding of submarine dismantlement by donor countries are substantially less than the levels of funding promised in declarations on cooperation in this area under the Global Partnership.

**Results of and Prospects for Cooperation**

To date, of 122 nuclear submarines dismantled in Russia, a quarter (over 30) were dismantled with foreign assistance. The lack of attention to the Russian Far East is the most serious problem today – in particular, the lack of the necessary dismantlement infrastructure in the region. Issues that are becoming increasingly urgent both in the Russian Northwest and Far East are the dismantling of nuclear maintenance vessels, nuclear-powered surface ships, and icebreakers as well as removing radioisotope thermoelectric generators. Another important issue is ensuring the equal character of Global Partnership cooperation. As Rosatom Deputy Director Sergei Antipov notes, "International cooperation under the Global Partnership is a critical factor in the rapid and safe solution to the problem of Russian multipurpose submarine dismantlement. It is progressing fairly successfully in the formation of a legal basis via both bilateral and multilateral agreements. On the one hand, this development inspires optimism, but on the other hand the clear lag in the practical realization of cooperation elicits caution.

Existing submarine dismantlement capacities allow for the scrapping of 20 submarines per year. However, safety considerations and the need to obtain an optimal distribution of available funds between various stages of the submarine dismantlement process (the safe maintenance of submarines in floating storage, their transport to shipyards, safe defueling, the secure transport of SNF to the Mayak facility for processing, the maintenance of safety at on-shore technical bases, radioactive waste treatment, removal of SNF from on-shore bases, the rehabilitation of these bases, etc.) caused the Russian Government to designate the optimal average rate of dismantlement at 15 boats per year.

Today the emphasis should be put on solving the problems of on-shore technical bases, which house approximately the same amount of SNF as is located on submarines, but in much worse condition – both in terms of technical storage conditions and in terms of physical security.

Table 13

**The Legal Basis for Cooperation in the Sphere of Nuclear Submarine Dismantlement**

Country	Intergovernmental Agreement	Interagency Agreement	Contracts
Canada			
Denmark			
Finland			
France			
Germany			
Italy			
Japan			
Netherlands			
Norway			
Sweden			
United Kingdom			
United States			
	CONCLUDED	NOT YET CONCLUDED	NOT PLANNED

Source: Report by Russian Federation Deputy Minister of Atomic Energy Sergei Antipov at the international conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," Moscow, April 23, 2004.

Success or failure in this area will depend on a multitude of factors both international and inside participating nations. But one thing is clear: the central determinant of success in this field will be the clear, transparent, and pragmatic position of Russia. Today only Russia is a member of all international programs, initiatives and agreements (both international and bilateral) in this sphere, without exception. Furthermore, the solution of this problem is taking place on its territory, in its legal field, and with the participation of its enterprises and personnel. And Russia's financial contribution to the solution of the submarine dismantlement problem exceeds the aggregate contributions of all of the other participants combined. For this reason its voice and its positions should be heard, understood, and accepted by its partners.<sup>66</sup>

**Further Reading**

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Dmitry Kovcheghin, "SNF Reprocessing in the Context of the Global Partnership Program" *Yaderny Kontrol*, No. 2 (Summer), 2005, pp. 105–120.

Sergey Antipov, "Nuclear Submarine Dismantlement: No One Has Crossed the Finish Line Yet," *Yaderny Kontrol*, No. 4 (Winter), 2003, pp. 9–14.

Yury Fedorov, ed. "Cooperation in the Name of Global Security," *PIR Center Study Papers*, No. 19, 2002, pp. 74–87.

<sup>66</sup> Report by Russian Federation Deputy Minister of Atomic Energy Sergei Antipov at the international conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," Moscow, April 23, 2004.



## The Secure Storage and Elimination of Nuclear Warheads, Materials, and Strategic Delivery Systems

### The Transport and Storage of Nuclear Warheads

The first and most urgent task was to ensure the secure transportation of nuclear warheads: in addition to its regular task of servicing warheads and providing for their scheduled replacement, the Russian military had to provide for the withdrawal of warheads from tactical delivery systems, in accordance with the initiatives of September-October 1991, and then the spring 1992 withdrawal of tactical warheads from Ukraine and Kazakhstan, and finally the withdrawal of strategic nuclear missile warheads from three countries (Belarus, Kazakhstan, and Ukraine).

Under the Comprehensive Threat Reduction program (also known as the Nunn-Lugar Program), Russia was provided with 4,520 Kevlar blankets and 150 supercontainers, as well as kits for the refitting of 117 railcars for warhead transport, including 15 sentry railcars (the railcars were constructed and refit in Russia with American equipment and funding). Five special emergency response units for quick response to accidents involving or assaults on the railcars were also delivered. The deliveries under this program were completed, but in November 1999 the U.S. Department of Defense and Russian

Ministry of Defense signed a new contract, with the goal of servicing and repairing the pre-existing railcars as well as replacing them with 115 new cars. U.S. assistance was also used to create a system to monitor warheads in transit constantly. The Russian Ministry of Defense also received equipment previously considered quite exotic, such as polygraphs to determine personnel reliability, which in practice proved to be quite useful.

**Yevgeny MASLIN, Head of the 12<sup>th</sup> Main Directorate (GUMO) of the Russian Ministry of Defense, 1992-1997. The 12<sup>th</sup> GUMO is responsible for the secure storage and transportation of nuclear weapons. Maslin recalls:**



"We had to consider not simply transport safety, but also a heightened level of security. We were not ready for this turn of events right away. The disarmament process had become active, primarily due to the START I Agreement. Could we have fulfilled the obligations we had taken upon ourselves on time without American assistance? It is unlikely. And other previously unknown threats appeared, such as the possibility of the unauthorized access of terrorist groups to nuclear weapons in storage or being transported. We felt this threat particularly seriously in 1991-1992, when the conflict in Chechnya began to heat up."

### The Security Assessment and Training Center (Sergiyev Posad, Moscow region)

"The strategic nuclear facility's alarm literally burst forth from the warning signals coming into the command post. The lights on the electronic controls displaying a map of the guarded perimeter blinked continuously; the computer monitors showed the location of the unauthorized access to the protected area. But instead of suppressing an attempt to penetrate the strategic facility and apprehending intruders, the servicemen patiently explained to the transgressing journalists how the alarm system worked, who had stepped on or crossed what invisible infrared beam...

This happened in the city of Sergiyev Posad, near Moscow, where the Ministry of Defense 12<sup>th</sup> Main Directorate, responsible for the Russian military's nuclear arsenal, has a training center. The project that created the center was part of U.S.-Russian cooperation under the Cooperative Threat Reduction

program, also known in Russia as the Nunn-Lugar Program. According to Colonel General Igor Valynkin, Head of the 12<sup>th</sup> Main Directorate, the United States successfully fulfilled its commitments and provided significant assistance to the Russian Ministry of Defense in heightening the security of Russia's arsenals of nuclear weapons.

In addition to the theoretical training of specialists, various security systems can be tested at the Sergiyev Posad Security Assessment and Training Center training ground, which simulates the territory of real facilities at which nuclear warheads are stored, and create "individualized" security systems based on these tests.

**Dmitriy Litovkin, "The World Can Rest Calmly While the 12<sup>th</sup> Main Directorate Worries," *Yadernaya bezopasnost*, April 1, 2000, p. 13.**

### Colonel General Yevgeny Maslin, Former Head of the Russian Ministry of Defense 12<sup>th</sup> Main Directorate, on the Nunn-Lugar Program

**Question:** "Russians have a variety of opinions about the character of the assistance [under the Nunn-Lugar Program]. The observation that it is not assistance at all, or if it is assistance, then primarily to American companies, is commonplace. They say that we could easily do without the Nunn-Lugar plan. They propose a whole system of argumentation."

**Maslin:** "I know this argumentation well. And although some of its individual theses can be accepted, I cannot agree with it as a whole. Take for example the transportation security equipment. The Americans fulfilled their promises exactly on time. And we, I have to note, did not have to pay a kopeck. On the other hand, the adaptations that the Americans proposed truly did allow us to heighten the security of warheads under transport. The U.S.A. also provided us with equipment to liquidate the consequences of an accident. Equipment that our factories do not build. Aren't these tangible pluses? Indeed, the United States primarily allocated money to its own manufacturers. Couldn't we, for instance, build our own transport-protection equipment today? Each supercontainer costs about 50 million rubles. But everything that we have received from the United States is free. Why shouldn't we take advantage of this? Because "they want to disarm us"? Of course they want to. Because they feared, fear, and will continue to fear our nuclear strength. And at the same time we drew up framework agreements that do not harm either our interests or our security. High politics is not my job. But that which I have seen within the nuclear sphere entrusted to me indicates that the American assistance has been provided effectively and that on the whole commitments are being fulfilled. And besides this, they ask "What else do you need to increase nuclear security?" And I answer, "Give us 600 more of these containers." My American interlocutors wrote that down and promised to do it as quickly as possible. In addition they offered to equip several more railcars with emergency equipment, and carry out diagnostics on the railways, inspect the rails. Finally, we are considering the provision of American computer equipment to the Russian Ministry of Defense. We trail behind the Americans in the computerization

of the control and accounting system for nuclear warheads.

What is nuclear terrorism, really? Theft, I understand. The theft of nuclear warheads from a Ministry of Defense storage facility is impossible; I can vouch for this with full responsibility. But what is theoretically possible, and that which we should be ready for, is an attack on railcars, an attempt to seize nuclear warheads in transit. For what? Let's say, so that [Chechen] General Dudayev can scare everyone with his "own nuclear weapons." Employing this sort of weapon is technically impossible, but as a weapon for blackmail it's a very "strong argument." There is also the threat of radioactive contamination. But not only followers of Dudayev could be striving to get nuclear munitions. I repeat that this threat is possible, and we are not just not excluding it, but taking it into account in developing our actions, perfecting our criteria for the selection of personnel, training them, we are establishing a new generation of code-blocking equipment... The fact that there have been several losses of fissile materials from Minatom enterprises and the Northern Fleet also causes us to devote serious attention to the problem of counteracting nuclear terrorism. It's true that all of the investigations indicated that a bomb could never be made from this material. But nevertheless, there were losses, and this causes us to be on the alert as well. We undertook simulations at our facilities, trying to answer the question that you, probably, planned to ask: "And what if...?" And I tell you that frankly, as a result of these training exercises a question came to the forefront of my mind that we had not considered before at all: what if people who had previously worked with nuclear armaments attempt such a thing? Let's say, dismissed from our branch of the service, socially discontent, embittered..."

**"To Date Not One Russian Nuclear Weapon Has Been Lost or Stolen." Interview of Yevgeny Maslin, Head of the Ministry of Defense 12<sup>th</sup> Main Directorate, by Vladimir Orlov, Editor of the *Yaderny Kontrol* journal, *Yaderny Kontrol*, No. 5 (May 1995), pp. 11-13.**



The United States has provided 26,500 containers for the storage of fissile materials removed during the disassembly of nuclear warheads; the total number of containers is supposed to reach 32,000. The United States has also assisted in the creation of a system to evaluate security and safety measures, and a multi-level automated system of nuclear warhead control and accounting.

On November 10, 1992, Russia and the United Kingdom signed a Memorandum of Understanding regarding the provision of supercontainers and vehicles for the transport of nuclear weapons. In accordance with this document, the United Kingdom provided 250 armored containers (so-called "supercontainers") and 20 armored vehicles for the transport of nuclear weapons. The first containers were received in Russia on May 8, 1994. The delivery of £35 million worth of containers was completed in late 1994. This project was particularly timely and useful, considering that the withdrawal of nuclear weapons from the territory of the former Soviet republics to the ter-

ritory of the Russian Federation was occurring at just this time.

The provision of supercontainers was one of the first successfully completed projects in the elimination of the "Cold War legacy." In addition to the United Kingdom, France too provided supercontainers, and Italy and Germany provided emergency equipment for the 12<sup>th</sup> Main Directorate in the early 1990s.

The enhancement of the physical protection of nuclear munition storage sites began a bit later. The problem in this area was that in the Soviet era nuclear facilities were secured not only by fences, guards and an accounting system, but also by elements of the political system, like strict control of border crossing, the state monopoly of foreign trade, the considerable capabilities of the security services, etc. Under the new circumstances the physical protection of facilities had to be moved to the boundaries of facilities themselves.

Table 14

## Strategic Weapons Elimination under the Nunn-Lugar Program, Interim Results (1991–2005)

	Cumulative Reductions as of August 1, 2005	Projected Reductions, 2007	Projected Reductions, 2012
Warheads Deactivated	6,760	7,792	8,567
ICBMs Destroyed	587	766	1,140
ICBM Silos Eliminated	483	485	485
ICBM Mobile Launchers Destroyed	32	139	355
Bombers Eliminated	150	155	155
Nuclear ASMs Destroyed	789	906	906
SLBM Launchers Eliminated	436	472	572
SLBMs Destroyed	549	609	669
SSBNs Destroyed	28	32	32
Nuclear Test Tunnels/Holes Sealed	194	194	194

Source: The Official Website of U.S. Senator for Indiana Richard G. Lugar, [http://lugar.senate.gov/nunn\\_lugar\\_scorecard.html](http://lugar.senate.gov/nunn_lugar_scorecard.html)

The United States helped create the Security Assessment and Training Center in Sergiyev Posad (Moscow region). The center serves as a training ground and laboratory for the development of security systems as well as a training center for personnel. The Center was opened in the fall of 1999. In 2005, the U.S. Department of Defense announced plans to build a similar center, to be called the Far East Training Center, in the Russian Far East, most probably in Khabarovsk. The program, which will cost about \$10 million, is designed to create a regional training facility for all branches of the Russian Ministry of Defense involved with providing security for weapons of mass destruction in the Russian Far East.

According to U.S. Secretary of Energy Spencer Abraham, by November 2003 security upgrades had been provided for 78% of the Russian Navy's nuclear facilities and 20% of the Strategic Rocket Forces nuclear warheads. The U.S. Department of Defense plans to complete comprehensive upgrades of the physical security systems at all nuclear warhead storage sites by 2010, and the U.S. Department of Energy plans to complete its work at Russian Navy facilities by 2006, and at Strategic Rocket Forces sites by 2008.

On October 6, 2003, the Agreement on Cooperation Between the Russian Federation Ministry of Defense and the German Ministry of Foreign Affairs in the Sphere of the Physical Protection of Nuclear Materials and Nuclear Weapons Subject to Dismantlement was signed. Under this agreement, Germany intends to fund the strengthening of physical protection at facilities under the jurisdiction of the Russian Defense Ministry's 12<sup>th</sup> Main Directorate. Overall cost of the German program is €170 million.

## Further Reading

Victor Yesin, "The Truth About Suitcase Nukes," *Yaderny Kontrol*, No. 2 (Summer), 2005, pp. 67–74.

Vladimir Verkhovtsev, "Nuclear Weapons Security – Russia's Top Priority in the Long Term," *Yaderny Kontrol*, No. 1 (Spring), 2005, pp. 28–40.

Yevgeny Maslin, "The Security of Russian Federation Nuclear Arsenals," *Yaderny Kontrol*, No. 4 (Winter), 2004, pp. 17–28.

## Physical Security and Accounting and Control of Nuclear Materials

William ROTH, U.S. Senator, 1966–2000



"The system of nuclear materials, weapons, and technology security in the former Soviet Union is catastrophically inadequate. In place of mutually assured destruction we now have 'mutual insecurity.'"

## The Scale of the Problem

The greatest threat of nuclear weapons proliferation is posed by highly enriched (over 20% U<sup>235</sup>) uranium (HEU) and weapons-grade plutonium. There is no open-source official information about stockpiles of these materials in Russia. Existing estimates are based on the analysis of plutonium-production reactor operating methods, enrichment activity, nuclear weapons tests, the pace of weapons dismantlement, the reduction of HEU through the U.S.-Russian HEU-LEU program, and other indirect indicators. The dismantlement of nuclear weapons actually increases the quantity of HEU that requires enhanced protection, at the same time that the U.S.-Russian HEU-LEU Agreement is resulting in reduced quantities of this material.

According to expert estimates, the Soviet Union and Russia produced 120–150 metric tons of weapons-grade plutonium and 1,000–1,350 tons of HEU (with an enrichment level of over 90% U<sup>235</sup>). In the mid-1990s, about 30% of weapons-grade nuclear materials was probably in warheads. In early 2001, the U.S. Government confirmed that Russia had 603 tons of HEU and weapons-grade plutonium in forms highly attractive to theft, and that 252 buildings at 40 Russian enterprises needed to modernize their nuclear materials security systems.

There are stockpiles of weapons-grade nuclear materials in several dozen enterprises scattered across all of Russia. According to data presented in 2000 by then First Deputy Minister of Atomic Energy Valentin Ivanov, at that time 61 organizations in Russia possessed nuclear materials.

The overwhelming majority of weapons-grade nuclear materials is located in Rosatom's "closed



### Mikhail Kulik, Critical Affairs Investigator, Northern Fleet Military Procuracy, on the Level of Protection of Radioactive Materials

*In November 1994, Northern Fleet Military Procuracy Critical Affairs Investigator Mikhail Kulik completed a criminal case relating to the theft of radioactive materials from the Northern Fleet storage depot in Polyarnny, Murmansk region. Three fresh fuel assemblies for nuclear submarine reactors, containing about a kilogram of U<sup>235</sup>, had been stolen. The three men found guilty of the theft were captured and admitted their guilt. They had expected to receive about \$50,000 for the stolen nuclear materials.*

**Mikhail Kulik:** "How was the depot where the theft occurred protected?"

On the Kola Bay side there was no fence at all: sail up in a boat and go for it. On the side near the Murmansk industrial zone there were shipyards and lumber processing plants, in short, an unguarded industrial zone. There were gaps in the fence everywhere. And where there weren't, any child could loosen the half-rotten boards. There was no control and tracking strip along the perimeter of the site. It was not difficult to access the rear of the storage facility. Large equipment and nonferrous metal that will never be used had been kept on and around the territory of the storage depot for many years. No one was even taking the metal out to sell for recycling. The littered territory gave the criminals the impression that the storage facility housing the fuel assemblies was probably not reliably protected either. And that impression was not misleading.

The storage depot itself was equipped with nuclear defense, that is, a monitoring system to ensure that a self-sustaining nuclear reaction did not occur, a fire protection system, and a water alarm (the detector was two elementary contacts located at a certain level from the top: when the water reached this level, the contacts would engage and an alarm would sound).

But there was practically no intruder alarm. There was a simple contact switch: when a door opened, a connector would lift, and the alarm would sound. When the door closed, the connector would come back down into place, the contact would be broken, and as a result the alarm would stop working. The alarm was connected to a console 100 meters away from the storage depot itself. In addition, the alarm in the storage depot was connected [between the

doors] — if you opened one of the doors (the main door or the emergency door), the other could then be opened without setting off the alarm. In addition, the cable from the alarm went through the locker room. The switchboard in the locker room was not even locked. In other words, if a thief got into the locker room he could leisurely take the switchboard off-line and act.

Two old women sat at the console: private security guards. But not always. In order to get there, they had to go through the territory full of rubbish, and in winter, gigantic snowdrifts as well. The old women were armed with guns, but they were afraid to pick them up. There were no lights at all. Even potatoes are guarded better than radioactive materials.

You can't say that there aren't any instructions on how to guard this sort of facility. Specifically, a Manual on the Protection of State Secrets (often known by its Russian acronym ZGS) was developed, approved by an order of the Russian Minister of Defense, and is now in force. Nevertheless, it is not adhered to by the Northern Fleet. In part, this is due to a lack of funding. In part, command's dereliction of duty. I repeatedly had to listen to officers tell me: "We don't have this order, we don't know it, why should we fulfill it?"

According to standing instructions, the locks on storage depots should be set-in, of a type that cannot be sawed off. In practice, at the storage depot where the theft took place there was a standard padlock, and it was rusted. The criminals needed less than ten minutes to saw it off.

Maintenance work on the storage depot was performed nearly every day "using their own resources," as they say. What does that mean? Boards were torn off the packaging materials from the large equipment [left at the site] and nailed to the fence, and a little barbed wire was added. Thus, the holes in the fence were patched up in a criss-cross fashion. That was all of the "protection enhancement".

**Mikhail Kulik, "Several Problems in the Protection of Nuclear Materials in the Northern Fleet," *Yaderny Kontrol*, No. 2 (February), 1995, p. 12.**

### Security Problems of Nuclear Hazardous Facilities in the Russian Federation. From a Transcript of Parliamentary Hearings in 1996

#### Igor Valynkin, First Deputy Head of the Ministry of Defense 12<sup>th</sup> Main Directorate:

"The special facilities designed for the protection of nuclear munitions have been in use for a long time — 30 or 40 years or more — and now need major or minor overhauls, replacements, reconstruction of certain items, or life support systems. The fact that they are overfilled with nuclear munitions with expired service lives, as well as munitions that are supposed to be dismantled in accord with the international treaties that Russia has concluded, causes substantial anxiety. At the present time, because dismantlement plans are not being fulfilled, the number of munitions that have passed their expiration dates is growing by the day at our facilities. The designers tell us we cannot store them. There are already more than 2,000 such munitions. If we continue at this rate, we will increase this number next year by several times."

#### L.G. Belov, independent expert:

"Russia alone has over 400 land-based rail- and road-mobile strategic missile systems and nearly twice as many nuclear munitions, in aggregate equaling 400 megatons. All of this hardware is located near the largest cities, and it is not structurally protected against even a 7.62 caliber rifle; it is housed in shells, like our cars in Moscow. If one uses a grenade thrower to hit a Topol [ICBM launch system] or a missile train, will the nuclear charge remain inactive?"

#### Igor Valynkin:

"Both the missile train and the road mobile launcher present explosion hazards. They are not protected against grenade launchers or bullets.

Our explosive agents are inferior to the American both in terms of fire resistance and detonation, so if they are attacked an explosion could occur, and if they are shot an explosion could occur.

By the way, an experiment was conducted at the Semipalatinsk Test Site with a Pioneer mobile launcher, where the Pioneer was shot up using rifles. The explosion was so strong, that nothing was left of the launcher."

#### Lev Ryabev, Deputy Minister of Atomic Energy:

"The technical means of protection of our facilities have used up 70% of their service lives. Twenty percent of them have already been used 2–3 times longer than designed. We are trying to maintain

them, but it is already impossible. At the majority of checkpoints there are no devices to detect the unauthorized transport by vehicle or on an individual's person of nuclear materials, metal, or explosive materials. Although up-to-date models of such devices have already been designed."

#### Vladimir Afanasyev, Head of the Engineering Department at the Russian Federal Nuclear Center — All-Russian Scientific Research Institute of Experimental Physics (VNIIEF), Sarov:

"What kind of external physical security of nuclear weapons facilities can we be talking about if inside there are thousands of people with this sort of salary? How should they relate to the performance of their duties, when they are literally holding nuclear devices in their hands on a daily basis? If we don't adopt some urgent measures, in the next few years very few qualified specialists will remain who can answer for the safety of nuclear weapons."

#### Representative of the Russian Federation Security Council:

"Due to the erratic payment of wages at several enterprises the majority of workers have taken administrative leave and are not at the facilities for several months at a time, while retaining their access cards. In effect there is now a category of people at these facilities that have access to nuclear materials, but the loyalty of whom no one can guarantee."

#### Igor Valynkin:

"The most dangerous period in the exploitation of nuclear munitions is during transport, either via road or rail. The existing fleet of vehicles can still provide for the transport of special items, but the special vehicles are being taken out of circulation due to the expiration of their service lives. By 2000, there will only be 362 left in service. Fleet renewal is proceeding extremely slowly. In 1993, nine vehicles were built, in 1994 — 15, and in 1996 — seven. Thus, between 1993 and 1996, 38 new vehicles were brought into service and 223 taken out of service. The United States, France, Germany, and the United Kingdom are assisting us with safe operations. For instance, we received 100 conversion kits for nuclear munitions transport vehicles, and 15 kits for guard vehicles. We received equipment for the liquidation of the consequences of



an accident, and received Kevlar blankets for the transport of nuclear munitions. We received equipment for the accounting of nuclear munitions. But at the same time the United States is spying and, giving us this equipment, trying to get into our facilities. To date no foreign citizen has entered any of our facilities, but there have been attempts. And besides this, the United States is trying everything to prove that Russia is not able to protect its nuclear weapons and therefore must put it under IAEA control."

#### Representative of the Russian Federation Security Council:

"We are spending 0.4% of overall costs on physical security at Ministry of Defense facilities. It is normal for operators building nuclear power plants to spend about 10% of the total cost of the facility on physical security."

**"The Possibility that Nuclear Materials Might Be Stolen Cannot Be Ruled Out," *Yaderny Kontrol*, No. 34-35 (October-November), 1997, pp. 7-11.**

cities," as well as several enterprises and research institutes near Moscow. The quantity of nuclear materials at these facilities varies from several kilograms to several dozen tons.

Providing these facilities and materials with modern nuclear materials protection, control and accounting (MPC&A) systems is beyond Russia's current capacity. The planned level of funding for the sub-program "The Organization of a State System of Accounting and Control of Nuclear Materials and a State System for the Accounting and Control of Radioactive Materials and Waste," part of the Federal Targeted Program "Russian Nuclear and Radiation Safety 2000-2006," affirmed by Government Resolution No. 149 of February 22, 2000, totals 70 million rubles for seven years, which is about 30 times less than the necessary level. Furthermore, this sum does not include expenditures on the physical security of nuclear materials, while it does include spending to improve the system of accounting and control of radioactive materials, which present far less danger.

#### Basic Areas of U.S.-Russian Cooperation in MPC&A

Current U.S.-Russian cooperation in the field of MPC&A is being carried out under the *Agreement Between the Government of the Russian Federation and the Government of the United States of America Regarding Cooperation in the Area of Nuclear Material Physical Protection, Control and Accounting* of October 2, 1999, signed by then Russian Minister of Atomic Energy Yevgeny Adamov and then U.S. Secretary of Energy Bill Richardson. Its main goal is the reduction of the threat arising from the inade-

quate security of weapons-grade nuclear materials. To meet this goal, the following cooperative programs have been launched:

- the improvement of MPC&A systems;
- the consolidation and conversion of weapons-grade nuclear materials;
- the training of personnel in MPC&A; and
- the development of a legal and regulatory framework on nuclear matters.

#### The "Government-to-Government" Program and Cooperation with the U.S. Department of Defense

Beginning in 1992, work on improving MPC&A systems at Russian facilities was financed out of the U.S. Defense Department budget for Cooperative Threat Reduction programs. The U.S. Department of Energy, however, coordinated the implementation of corresponding projects within the United States. In 1993, the U.S. Department of Defense and Russian Ministry of Atomic Energy concluded an agreement on the development of a national system of physical protection, control and accounting for nuclear materials in the civilian sphere. The U.S. Department of Energy MPC&A projects were combined into the so-called "government-to-government" program.

In the initial stage of this cooperation, the Russian Safeguards Training and Methodology Center for the training of Russian specialists in modern methods of designing, implementing, and operating MPC&A systems was established at the Institute of Physics and Power Engineering in Obninsk. The intergovernmental program was only extended to cover facilities where "direct-use" nuclear materials are stored and used in 1995.

In June 1995, at a meeting of the Gore-Chernomyrdin Commission, an agreement was signed whereby the program activities were extended to cover the HEU production line at the Machine Building Plant in Elektrostal, the Luch facility in Podolsk (both in Moscow region), the Scientific Research Institute of Atomic Reactors (NIIR) in Dmitrovgrad (Ulyanovsk region), the Mayak Plant in Ozersk (formerly Chelyabinsk-65) and the Institute of Physics and Power Engineering in Obninsk (Kaluga region). In 1996, cooperation under the "government-to-government" program was expanded to yet 10 more Minatom enterprises. In addition, in 1996 MPC&A programs in Russia were transferred to the U.S. Department of Energy, which continues to manage these programs to the present day.

#### The "Lab-to-Lab" Program and Cooperation with the U.S. Department of Energy

In 1994, the U.S. Department of Energy initiated a program that came to be called the "lab-to-lab" program. It was founded on the working relations that had been established between the U.S. national laboratories and Russian institutes and enterprises. This allowed the program to avoid

many of the problems that arose in the "government-to-government" program. Critical lab-to-lab MPC&A projects included demonstrations of jointly designed MPC&A systems; projects aimed at improving the effectiveness of existing MPC&A systems; a measurement control program to ensure the accuracy of the measurement equipment used in the MPC&A system; and the development of devices to indicate materials had been disturbed. Among the Russian participants were the Russian Federal Nuclear Center-All-Russian Scientific Research Institute of Experimental Physics (VNIIEF), Federal Nuclear Center - All-Russian Scientific Research Institute of Technical Physics (VNIITF), the Siberian Chemical Combine (SKhK), the Bochvar All-Russian Scientific Research Institute for Inorganic Materials (VNIIM), All-Russian Scientific Research Institute of Automation (VNIIA) and the Eleron Special Scientific and Production State Enterprise.

The relative value of the "lab-to-lab" program as compared to the "government-to-government" program is indicated, among other things, by the expenditures made under its auspices.

Table 15

#### "Lab-to-Lab" Program Funding, FY 1994-95 (in millions of dollars)

Fiscal Year	Congressional Allocation	Contracts Awarded	Expenditures
1994	2.1	2.1	1.6
1995	15.0	15.0	12.7
<b>Total</b>	<b>17.1</b>	<b>17.1</b>	<b>14.3</b>

#### Results of Cooperation under the MPC&A Program

In February 1997, the U.S. Department of Energy merged the lab-to-lab and government-to-government programs into a single MPC&A program.

On the Russian side, the United States Department of Energy's partners were the Russian Ministry of Atomic Energy (now Federal Atomic Energy Agency - Rosatom), which manages the

overwhelming majority of Russian nuclear facilities, and the Russian Federal Inspectorate for Nuclear and Radiation Safety (Gosatomnadzor, now Rostekhnadzor), which coordinates United States-Russian cooperation at non-military nuclear facilities under the Ministry of Education, Russian Ministry of Economic development and Trade, Ministry of Science, etc. In addition, the U.S. Department of Energy concluded an agreement with the Russian Navy, as well as several Russian closed nuclear centers.



By 2001, the U.S. Department of Energy had fully or partially completed the installation of nuclear material security systems through the MPC&A program at 115 of 252 buildings holding 192 tons of weapons-grade nuclear materials that were of particular concern. Work was fully completed at 81

buildings holding 86 tons of nuclear materials, while so-called "quick fix" upgrades had been completed at 34 buildings containing 106 tons of nuclear materials. Activity had also begun at facilities holding an additional 130 tons of nuclear materials.

Table 16

## Interim Results of the MPC&amp;A Program

	Buildings at Civilian Facilities	Buildings at Navy Sites	Buildings at Weapons Laboratories	Total
Completed	51	21	9	81
Partially completed (quick-fix)	8	3	23	34
Work begun	11	11	46	68
Work not yet begun	19	1	49	69
<b>Total</b>	<b>89</b>	<b>36</b>	<b>127</b>	<b>252</b>

The fact that the buildings that have received "quick fixes" contain more weapons-grade nuclear materials than those buildings where comprehensive upgrades have been completed suggests that over time this cooperation is spreading to more and more "sensitive" sites. At the same time, the significant quantities of nuclear materials (nearly 70%) located in buildings that are not covered by the upgrades indicates that access problems continue to be one of the most important obstacles to cooperation.

From 1993 to 2001, U.S. funding of programs to improve MPC&A in Russia totaled \$797.3 million. In

2002, \$266.6 million was allocated for this program; in 2003 – \$193.89 million; in 2004 – \$212.15 million; and in 2005 – \$330.45 million. However, this growth in funding is in part due to the fact that other programs have been brought under the banner of the MPC&A program. In reality funding for these programs is decreasing. Thus, plans call for an 8.5% decrease in funding for MPC&A programs at Russia Navy sites and a 14.5% decrease at Strategic Rocket Forces sites in 2006 (in part because projects have been completed at many sites), while expenditures on programs in other CIS states are slated to increase.

Table 17

## U.S. Funding of the MPC&amp;A Program (in millions; fiscal years)

1993-96	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006*
\$101.28	\$112.64	\$137.01	\$139.75	\$138.74	\$169.53	\$266.60	\$193.89	\$212.15	\$330.45	\$245.50

\* 2006 budget request

## The Sustainable Development and Operation of MPC&amp;A Systems

By the end of the 1990s, a lot of experience in the modernization of MPC&A systems had been accumulated at Russian nuclear facilities. At the major-

ity "quick fixes" or comprehensive upgrades had been completed. Initially, the joint U.S.-Russian MPC&A improvement program was expected to be completed by 2002. This did not happen due to insufficient funding. The new term was extended

to 2008. At the same time, experience using the new systems showed that the installation of contemporary equipment is not enough to ensure the security of nuclear materials. There have been numerous cases where the new equipment has not been used properly.

For this reason, in 1999, the U.S. Department of Energy initiated a program to support the operation and robust performance of the MPC&A system:

- the provision of warranties and operational support for equipment, repairs, and the supply of spare parts;
- personnel training in the use and servicing of new equipment; and
- assistance in the design of procedures and instructions related to MPC&A and the proper handling of materials in accordance with the demands of new control and accounting rules.

## Assistance in the Creation of National Infrastructure

Another important part of MPC&A cooperation is the creation of national infrastructure:

- regulatory and law enforcement in the sphere of securing nuclear materials;
- a federal MPC&A information system; and
- a system for training personnel in MPC&A.

The U.S. Department of Energy has been assisting Rosatom in the design and implementation of the

Russian Federal MPC&A Information System (FIS). FIS provides Russian Government agencies with timely and accurate information on the location, type, and quantity of nuclear materials and the detection of possible thefts. At present 21 of 63 nuclear enterprises have been hooked up to the system.

The U.S. Department of Energy also supports several educational programs in the area of MPC&A. They include programs at the Russian Methodological and Training Center (RMTC) and the Interdepartmental Special Training Center (ISTC), located in Obninsk, as well as a master's degree program in MPC&A at the Moscow Engineering and Physics Institute (MEPhI).

## Nuclear Materials Consolidation and Conversion

There are weapons-grade nuclear materials in hundreds of buildings located on the territory of dozens of enterprises. In 1999, the U.S. DoE began a program to assist Russia in the consolidation and conversion of nuclear materials.

This program envisioned a reduction in the number of buildings and facilities (by 2010, plans called for the removal of nuclear materials from 50 buildings located at 5 enterprises) that had weapons-grade nuclear materials, and the conversion of 24 tons of HEU into LEU that cannot be used in the construction of a nuclear weapon. If this program were to succeed, it would cut down the expenditures needed for the installation and/or operation of MPC&A systems.

## The Russian Methodological and Training Center (Obninsk, Kaluga region)

The Russian Methodological and Training Center (RMTC) is the first training center in Russia created to impart the principles of nuclear materials control and accounting (MC&A), instructing nuclear center personnel and Gosatomnadzor (now Rostekhnadzor) inspectors in the theoretical aspects and practical skills of MC&A.

The decision to build the first MC&A training center in Russia was made in 1994, first by Minatom, and then at a governmental level. The center was created under the auspices of the Leypunskiy Institute of Physics and Power Engineering in Obninsk (Kaluga region) by a joint decision of Minatom and Gosatomnadzor, and approved by the Russian Government.

The United States and the European Commission supported the idea of creating the RMTC and included

projects that envisioned the training of instructors, equipping of the center with modern nuclear materials control equipment and instructional materials, as well as training sessions themselves in their plans for cooperation with Russia. The significance of this cooperation was noted by President Yeltsin at a high-level meeting on nuclear security in Moscow on April 19–20, 1996.

The RMTC study program includes six training divisions and is made up of 27 courses that cover all of the fundamental areas of MC&A.

The training courses are the result of the consolidation of the experience and cooperative work of Russian, American, and European specialists in the area of MC&A.



However, to date the nuclear materials consolidation program is practically at a standstill. The reason for this is both that Rosatom does not want to identify the concrete facilities from which material should be removed until a separate agreement has been concluded governing this program, and that the heads of enterprises in the nuclear sphere do not want to "give up" the nuclear materials. These materials are often seen as a guarantee of future funding under the MPC&A program. Still the DoE succeeded in reducing the number of buildings with nuclear materials at enterprises that were not part of the consolidation and conversion program. Among them are the Leypunsky Institute of Physics and Power Engineering in Obninsk and the Luch Scientific Production Association in Podolsk.

#### The Mayak Fissile Materials Storage Facility

On December 17, 2003, the Mayak Production Association announced that the reconstructed and, to date, world's only fissile materials storage facility (FMSF) was open for operation. The FMSF was designed to hold 400 tons of uranium and plutonium (25,000 containers); the material in these containers must be stored for a minimum of 100 years. According to experts, the FMSF can withstand an earthquake measuring 8 on the Richter scale. Facility reconstruction began in 1995 on the basis of a bilateral U.S.-Russian agreement. The project was led by a joint executive group, which included representatives of Minatom and Mayak. Most of the funding came from the United States. The project cost totaled about \$400 million, and only some 30–40 million rubles were allocated from the Russian federal budget. The FMSF is only supposed to store Russian plutonium and uranium that is not needed for weapons programs.

#### An Estimate of Future U.S. Department of Energy Funding for MPC&A Programs

The U.S. Department of Energy estimates funding will total \$2.2 billion by 2020. This sum includes \$823.1 million for the completion of equipment installation by 2011, \$711.8 million for the maintenance of MPC&A systems, \$241.3 million for program management, and \$387.2 million for nuclear materials consolidation and conversion. These estimates, do not take into account the impact of the program on other parts of the overall MPC&A effort.

#### Nuclear Materials Security Cooperation with European States

Russia's cooperation with European states on ensuring the security of nuclear materials is not as all-encompassing or large-scale as U.S.-Russian cooperation.

The cooperation with Euratom's Safeguards Office is a good example. Russia's cooperation with Euratom began in 1993. Its main goal was to assist Russia in the creation of a modern state MC&A system. The Euratom projects did not involve the improvement of MC&A at concrete facilities. Attention was mainly given to infrastructure development: the adoption of an information management system, regulatory framework, development of inventory control methods, specialist training, etc. Funding under this effort has totaled €11 million since 1993.

Unlike the United States, the Europeans emphasized the use of Russian technology in the creation of an MC&A system from the beginning, which allowed them to avoid many of the programs that complicated U.S.-Russian cooperation.

Russian participants in cooperation with European states in this sphere include: the All-Russian Scientific Research Institute of Inorganic Materials (VNIIM), Rosatom, and Rostekhnadzor. Russia's partners on the European side include Germany's Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the Karlsruhe Transuranic Institute (Germany), the Institute for Reference Materials and Measurements (IRMM) in Geel (Belgium), the European Commission and the Government of the United Kingdom.

#### Further Reading

*Joint Statement by President Bush and President Putin on Nuclear Security Cooperation*, February 24, 2005. Available on the U.S. Presidential Website, <http://www.whitehouse.gov/news/releases/2005/02/20050224-8.html>

Graham Allison, Owen R. Coté Jr., Richard A. Falkenrath and Steven E. Miller, *Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material* (Cambridge, MA: MIT Press, 1996).

#### International Cooperation in the Elimination of Weapons-Grade Nuclear Materials and Termination of Their Production

Today Russia no longer produces nuclear materials for military uses. The production of HEU ceased in 1988. By September 1992, ten of thirteen plutonium production reactors had been halted, five of which were in Chelyabinsk-65 (Ozersk), another five in Tomsk-7 (Seversk), and three in Krasnoyarsk-26 (Zheleznogorsk). The three remaining reactors continue to operate (the ADE-4 and ADE-5 uranium-graphite reactors in Seversk and the ADE-2 in Zheleznogorsk), but are only used for the provision of electric power and heat to the closed nuclear cities (ZATOs). They produce 1–1.5 tons of plutonium each year that is not separated out from the spent fuel.

The main areas of international cooperation with Russia in the sphere of weapons-grade nuclear materials elimination and termination of production are:

- cooperation in the elimination of weapons-grade plutonium;
- the U.S.-Russian HEU-LEU deal; and
- U.S.-Russian cooperation in the conversion of plutonium-production reactors.

#### French-Russian Cooperation in the Elimination of Weapons-Grade Plutonium

The Agreement between the Government of the Russian Federation and the Government of the French Republic on Cooperation in the Sphere of the Peaceful Use of Nuclear Materials Obtained as the Result of the Destruction of Nuclear Weapons was signed on November 12, 1992, and entered into force on March 30, 1993. Under this Agreement, Russia and France participated in joint scientific research aimed at the modernization of Russian nuclear reactors enabling them to burn mixed uranium-plutonium (MOX) fuel. This program was given the name AIDA-MOX-1. The research consisted of an evaluation of the capability of Russian reactors (particularly the VVER-1000 and BN-600) to use MOX fuel produced from military plutonium. The program goal, in practical terms, was to research the possibility of using MOX fuel in Russian on an industrial scale. During the course of the research France used its experi-

ence in the use of MOX fuel in French water-cooled and water-moderated reactors.

The program chiefly focused on:

- the formulation of strategic approaches, via the creation of a list of various strategies for the elimination of weapons-grade nuclear materials that included evaluations of the feasibility of each strategy;
- reactor analyses, involving research into the possibility of converting VVER and BN reactors from burning uranium oxide fuel to mixed MOX fuel;
- a study of the chemical properties of plutonium; here the goal was the exchange of data on chemical methods for turning metallic plutonium or plutonium alloy into plutonium oxide in order to establish cooperation in the area of chemical methods and choose a corresponding pilot plant;
- MOX fuel production, involving the exchange of data on the design and construction of a plant to produce MOX fuel for both BN reactors and thermal reactors, in order to establish French-Russian cooperation in this area;
- reprocessing mixed fuel, through the exchange of data on the methods used and results obtained in the reprocessing of irradiated MOX fuel;
- the choice of an optimal reactor to burn MOX fuel.

The report released on the results of this research elucidates the advantages and demonstrates the technical feasibility of the MOX option for using weapons-grade plutonium in Russian nuclear reactors. Its main points were:

- the core of a VVER-1000 reactor can be loaded with 30% MOX fuel after the implementation of several modifications, analogous to the modernizations carried out at France's 900 MW light water reactors in the 1980s and 1990s. This research was carried out in 1997–1998, and showed that VVER-1000 reactors can burn 270 kilograms of plutonium per year;
- the use of MOX fuel in a BN-600 fast neutron reactor with 100% core loading is possible, but without a breeding blanket. It was noted that this is the optimal choice, but requires further safety studies. And converting the reactor to a hybrid core (with the partial use of MOX fuel)



would permit 240 kilograms of plutonium per year to be burned in this type of reactor;

- the determination of the MOX fuel production technology to be used at the installation that will be built in Seversk, Russia.

The production capacity of the future Russian plant for the reprocessing of plutonium into MOX fuel will be determined by the amount of MOX fuel to be used in the VVER-1000 and BN-600 reactors. The concrete numbers are as follows:

- 240 kg of plutonium per year in the BN-600 with a hybrid core; 1,310 kg of plutonium per year with the conversion to 100% use of MOX fuel;
- approximately 1,100 kg of plutonium per year at the four VVER-1000 reactors at the Balakovskaya NPP (the most modern), at 270 kg per reactor per year.

From this one sees that the plutonium reprocessing capacity should be about 1,300 kg per year with the hybrid loading of the BN-600, from which up to 30 tons of MOX fuel can be derived.

Russian participants in the AIDA-MOX program included the Institute of Physics and Power Engineering (Obninsk), Kurchatov Institute Russian Research Center (Moscow), Scientific Research Institute of Atomic Reactors (Dmitrovgrad), the Bochvar All-Russian Scientific Research Institute for Inorganic Materials (Moscow), and the Khlopin Radium Institute (St. Petersburg). French participants included the defense sector of the French Atomic Energy Commission as well as Cogema, Framatom, and SGN.

#### German-Russian Cooperation in the Elimination of Weapons-Grade Plutonium

German-Russian cooperation in the elimination of excess weapons-grade plutonium was based on the Intergovernmental Agreement on Assistance to Russia in Eliminating Nuclear and Chemical Weapons, which was signed on December 16, 1992, and entered into force on March 7, 1993. Under this agreement, Germany promised to provide gratis assistance for the elimination of nuclear and chemical weapons on the Russian Federation territory, resulting from reductions or eliminations in accordance with arms control and disarmament commitments.

Under this agreement, a preliminary design was made for a pilot MOX fuel production plant that would reprocess one ton of weapons-grade plutonium per year. The State Specialized Design Institute (GSPi), Mayak Plant, the Bochvar All-Russian Scientific Research Institute for Inorganic Materials (VNIIM) and Siemens company took part in the project. The use of both German (the Siemens plant in Hanau) and Russian (Mayak's Building 300) equipment was envisaged. It was estimated that given the small volume of MOX fuel produced by the installation, it would be about 30% more expensive than uranium fuel, without counting the cost of the initial metallic plutonium, but counting reprocessing costs. However, fuel costs could be significantly reduced by increasing production volume. The cost of building the pilot plant as a separate installation at Mayak was estimated to be 190 million German marks (about \$100 million). An estimate of annual operating costs was made, including all customary Russian taxes. The possibility of using the MOX fuel in the fast neutron BN-600/BN-800 reactors and VVER-1000 reactor was also confirmed.

#### Trilateral Russian, French and German Cooperation in Elimination Weapons-Grade Plutonium

In 1998, Russia, Germany and France decided to join forces and initiate a trilateral cooperative program. A corresponding agreement, AIDA-MOX-2, was signed on June 2, 1998, in Moscow. In 2000, Italy and Belgium joined the agreement as well.

According to the 1998 agreement, design documentation and an estimated construction schedule for a metallic plutonium conversion plant (the CHEMOX project) as well as a MOX production plant able to reprocess 2.3 tons of weapons-grade plutonium per year (the DEMOX project) were to be completed by 2002. During this same period, technical specification of engineering changes to Russian reactors to enable them to burn MOX fuel, as well as an estimate of capital and operating costs, were to be prepared. (According to preliminary data, costs would total some \$1.7 billion.)

The plan called for equipping the MOX production plant with equipment transferred to Russia from an analogous plant in Hanau, the construction of which had been suspended in 1995. French offi-

cials announced that the new plant would start operating in 2007–2008. However, this depended upon the delivery of the German equipment. Siemens, which owns the plant in Hanau, announced that the United States and France had allocated 500 million German marks (nearly \$300 million) for the project, although the total cost of the work was about 2 billion German marks (over \$1 billion). Due to the uncertainties surrounding project financing and the lack of political support, Siemens announced its intention of refusing to export the equipment to Russia and beginning its dismantlement.

#### Canadian-Russian Cooperation in the Elimination of Weapons-Grade Plutonium

In November 1994, Russian-Canadian consultations were held in Moscow to consider the possible use of excess Russian weapons-grade plutonium for the production of MOX fuel to be burned in Canadian NPPs with CANDU reactors. A declaration of intent was signed. Minatom expressed its interest in further study of the problem, while the Canadians agreed to examine the question of feasibility studies for the construction of a plant in Russia to produce MOX fuel assemblies for subsequent delivery to Canada.

This work was begun in 1996 after the signing of an agreement between Minatom and Atomic Energy of Canada Limited (AECL) on carrying out feasibility studies for the production of uranium-plutonium fuel for CANDU reactors using weapons-grade plutonium. The study results indicated the technical feasibility of producing MOX fuel in Russia for CANDU reactors and transporting it to Canada to burn at the Bruce NPP. The possibility of producing the MOX fuel for CANDU reactors at the DEMOX installation developed under the Russian-French-German project was also studied. This could significantly reduce total costs. According to preliminary estimates, the cost of realizing the project to burn excess Russian plutonium in CANDU reactors alone would cost about \$2 billion.

In addition, Minatom, the Canadian Department of Foreign Affairs and Trade, and the U.S. Department of Energy agreed to carry out the Paralex experiment, with U.S. and Canadian funding. This experiment envisaged the parallel irradiation of experimental MOX fuel produced from both U.S.- and

Russian-origin weapons-grade plutonium in CANDU reactors (at the Chalk River plant in Ontario, Canada) in order to compare the performance characteristics of the fuel. In 1999–2000 this fuel was prepared in the form of fuel elements at the Los Alamos National Laboratory and the Bochvar All-Russian Scientific Research Institute for Inorganic Materials (VNIIM) – the amount of weapons-grade plutonium in the Russian fuel was about 600 grams. The trial loading of the fuel in the reactor took place in early 2001. If the experiment succeeds and the technology is realized on an industrial scale, Canadian specialists estimate that up to 1.5 tons of weapons-grade plutonium can be eliminated per year in each reactor.

#### Japanese-Russian Cooperation in the Elimination of Weapons-Grade Plutonium

After the 1996 Moscow Nuclear Safety and Security Summit, Japan indicated its interest in cooperating with Russia in the sphere of excess weapons-grade plutonium elimination. Japan's long-range nuclear energy development plans call for the broad use of fast neutron reactors. Therefore, Japan is particularly interested in participating in a project to eliminate weapons-grade plutonium in Russian BN-600 and BOR-60 reactors using vibropacked MOX fuel, which has unique technical characteristics.

The Japan Nuclear Cycle Development Institute (JNC), which was named the organization heading the realization of this project, developed the following three-stage work schedule for its cooperation with Russia:

- stage one (through 2003): production of three vibropacked MOX fuel assemblies at the Scientific Research Institute of Atomic Reactors (NIAR) in Dmitrovgrad, and their experimental irradiation in the BOR-60 reactor (this stage has already been completed);
- stage two (through 2006): the design and creation of a hybrid BN-600 reactor core (loading MOX fuel into 20% of the core); the substitution of the U<sup>238</sup> radial steel blanket assembly with a stainless reflector; increasing the productivity of the NIAR installation to meet the requirement of loading the hybrid core with 40–50 assemblies per year;
- stage three (through 2010): conversion of the



BN-600 reactor core to a full load of MOX fuel; creation of an installation for the yearly production of 250 vibropacked MOX fuel assemblies. Activities to extend the service life of the BN-600 from 2010 to 2020 are also planned.

#### U.S.-Russian Cooperation in the Elimination of Weapons-Grade Plutonium

U.S.-Russian cooperation in the elimination of excess weapons-grade plutonium began in 1994. At a meeting in January 1994, Boris Yeltsin and Bill Clinton charged Russian and American specialists with determining the various options for the long-term disposition of fissile materials, plutonium in particular, taking into account nonproliferation, environmental protection, and security concerns as well as technical and economic factors. The first joint report of the expert group was issued in September 1996. It identified the most suitable methods for the elimination of plutonium as immobilization and its use as nuclear reactor fuel. On July 24, 1998, then Russian Prime Minister Sergei Kiriyenko and U.S. Vice President Albert Gore signed an intergovernmental Agreement on Scientific and Technical Cooperation in the Management of Plutonium that Has Been Withdrawn from Nuclear Military Programs. In this agreement the United States and Russia announced their intention to:

- "continue to cooperate with small-scale tests and demonstrations relating to management of plutonium;" and
- "as soon as is practicable, also proceed to pilot-scale demonstrations of technologies for plutonium management."

The main areas of U.S.-Russian cooperation that were announced were:

- conversion of metallic plutonium into oxide suitable for the manufacture of MOX fuel for nuclear power reactors of various types;
- stabilization of unstable forms of plutonium;
- use of plutonium in the form of MOX fuel in various types of nuclear power reactors;
- immobilization of plutonium, including wastes and hard-to-process forms; and
- disposal of immobilized forms of materials containing plutonium in deep geological formations.

The practical realization of the agreement was to be carried out by working groups created by the U.S.-Russian Joint Steering Committee on Plutonium Management:

- on the conversion of metallic plutonium (carrying out scientific and technical work to support the design and construction of an installation for the conversion of metallic plutonium into oxide suitable for the manufacture of MOX fuel);
- on light water (thermal neutron) reactors (research into questions relating to the irradiation of MOX fuel in VVER-1000 reactors, including the development of techniques for the production of this type of fuel, the production of fuel pellets for experimental fuel assemblies, and research on the physics of reactors and thermal hydraulics related to the transition from uranium to MOX fuel);
- on fast neutron reactors (the elaboration of a comprehensive plan for the staged conversion of the BN-600 reactor: first to a hybrid core, and then to full loading with MOX fuel);
- on immobilization (research into the immobilization of plutonium in glass and ceramic and the immobilization of wastes containing plutonium from Minatom industrial sites);
- on economic issues, regulatory controls and licensing; and
- on high-temperature gas-cooled reactor technology.

On September 2, 1998, the presidents of Russia and the United States signed the Joint Statement of Principles For Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes. The declaration stated that:

- the U.S. and Russia will each convert approximately 50 tons of plutonium withdrawn in stages from nuclear military programs into forms unusable for nuclear weapons. We recognize that interim storage will be required for this material;
- the two governments will cooperate to pursue this goal through consumption of plutonium fuel in existing nuclear reactors (or reactors which may enter into service during the duration of our cooperation) or the immobilization of plutonium in glass or ceramic form mixed with high-level radioactive waste;

- the U.S. and Russia expect that the comprehensive effort for the management and disposition of this plutonium will be a broad-based multilateral one, and welcome close cooperation and coordination with other countries, including those of the G8. They further intend to encourage partnership with private industry;
- in cooperation with others, the U.S. and Russia will, as soon as practically feasible and according to a time frame to be negotiated by the two governments, develop and operate an initial set of industrial-scale facilities for the conversion of plutonium to fuel for the above-mentioned existing reactors;
- conditions on cooperative projects for plutonium management and disposition will be determined by mutual consent of the parties participating in those projects;
- in the plutonium management and disposition effort, the U.S. and Russia will seek to develop acceptable methods and technology for transparency measures, including appropriate international verification measures and stringent standards of physical protection, control, and accounting for the management of plutonium;
- we also recognize that in order for this effort to be carried out, it will be necessary to agree upon appropriate financing arrangements; and
- both sides will develop strategies for the management and disposition of plutonium, taking into account the July 1998 agreement as well as a bilateral agreement, based on the principles set forth in this statement.

On July 23, 2003, the agreement expired. The United States refused to prolong it, due to the outstanding civil liability questions. The July 1998 intergovernmental agreement (article 9, points 1 and 2) frees the U.S. Government and U.S. personnel from liability for material damages and bodily injuries arising from activities undertaken pursuant to this agreement, with the exception of claims for damage or injury arising from premeditated actions. As a condition for extending the agreement, the United States insisted on dropping the proviso that concerned premeditated actions, that is, on full liability exemption irrespective of its deliberateness. This was unacceptable to Russia.

In accordance with the Joint Statement of Principles, in 1999–2000 negotiations were under-

taken that resulted in the September 1, 2000 Agreement Between the Government of the United States of America and the Government of the Russian Federation Concerning the Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation. The agreement created a legal basis for continued cooperation between Russia and the United States in the elimination of excess weapons-grade plutonium. Its most important provisions were:

- Russia and the United States committed to dispose of (convert into forms unusable for nuclear weapons) no less than 34 metric tons of weapons plutonium;
- both countries were banned from separating plutonium contained in irradiated MOX fuel until that country had fulfilled the obligation under the agreement to dispose of 34 tons of weapons-grade plutonium;
- each party was obligated to begin consultations with the International Atomic Energy Agency (IAEA) to allow it to implement verification measures (inspections);
- each party was to "effectively control and account for spent plutonium fuel and immobilized forms, as well as to provide effective physical protection of such material";
- Russia would be provided with technical and financial assistance for program implementation; and
- the operation of disposition facilities "necessary to dispose of no less than two metric tons per year of its disposition plutonium" was to begin not later than December 31, 2007. Russia was to meet this obligation "if the assistance specified in [this agreement] for this disposition rate is being provided for achievement of milestones in the Russian Federation."

The agreement required ratification, but was provisionally valid from the date of signature. Serious difficulties have become apparent in the realization of the U.S.-Russian plutonium disposition agreement. The Russian Federation views weapons-grade plutonium as a national asset and significant energy resource, and therefore chose the reactor option for the elimination of all Russian plutonium. Under this option, all weapons-grade plutonium is to be eliminated through its use as fuel for nuclear



power reactors. The United States initially chose two options: burning as reactor fuel and immobilization (vitrification). This engendered some apprehension in Russia. Many Russian experts believed that the reverse extraction of plutonium from the vitrified form could not be ruled out. Thus, the principle of irreversibility was violated and the threat to the

nonproliferation regime maintained. In January 2002, the DoE announced that it was abandoning immobilization, and had chosen the burning of excess weapons-grade plutonium in MOX fuel as the sole option for the handling of this material. This will result in up to \$2 billion in savings in the realization of the U.S. portion of the program.

Table 18

## U.S.-Russian Cooperation in the Elimination of Weapons-Grade Plutonium

Areas of Cooperation	Russian Participants
Conversion of metallic plutonium: assistance in the design and construction of a demonstration facility to convert plutonium metal into oxide suitable for the manufacture of MOX fuel	The Bochvar (VNIINM)*, Scientific Research Institute of Atomic Reactors (NIAR)**, State Specialized Design Institute (GSPI), Mayak, Scientific and Engineering Center
Designing MOX fuel fabrication methods, testing the fuel and certifying it for use in Russian VVER and BN-600 reactors	The Bochvar (VNIINM), NIAR, Novosibirsk Chemical Concentrates Plant (NZKhK), Atomenergoprojekt, Kurchatov Institute, Balakovskaya NPP, VNIIAES
Assessing the feasibility of modifying the BN-600 reactor for plutonium elimination	NIAR, Mayak, Institute of Physics and Power Engineering (IPPE), the Afrikantov Experimental Machine Building Design Bureau (OKBM), Beloyarskaya NPP
Feasibility study: using CANDU reactors for burning of MOX fuel with weapons plutonium	Bochvar (VNIINM)
Design of a high-temperature gas reactor to expand Russia's plutonium irradiation capacity	The Bochvar (VNIINM), Kurchatov Institute, OKBM, Luch, Siberian Chemical Combine, VNIPIET***
Development of plutonium immobilization technologies at Russian facilities	The Bochvar (VNIINM), GSPI, Mayak, Mining and Chemical Combine, VNIPIET, VNIPI Promtekhologii****, the Khlopin Radium Institute

\* All-Russian Scientific Research Institute for Inorganic Materials

\*\* All-Russian Scientific Research Institute for Nuclear Power Plant Operation

\*\*\* All-Russian Scientific Research and Design Institute of Energy Technology

\*\*\*\* All-Russian Research, Planning, and Surveying Institute of Production Technology

The greatest difficulties arose in connection with the funding of the Russian portion of the program. Many Russian experts believe that with funding, it would be relatively easy to solve even issues related to access and the verification of the implementation of the agreement. The cost of realizing the Russian portion of the weapons-grade plutonium elimination program tops \$2 billion over the course of 20 years, and does not include expenditures on program management, transparency measures, etc.

In July 2000, G8 leaders agreed that the G8 Non-Proliferation Experts Group (NPEG) should work out the international financing scheme for the disposal of Russian weapons-grade plutonium. However, this decision was not implemented.

At their 2002 summit in Canada, G8 leaders decided to fund a wide spectrum of WMD nonproliferation programs in Russia, including plutonium disposition. The possible commercialization of the program, using funds received for the use of MOX

fuel containing Russian weapons-grade plutonium at NPPs owned by power companies in foreign countries interested in disarmament (such as Germany, Switzerland, Sweden, Belgium, and Japan), is also being considered.

Recently it has also been suggested that private power companies could be engaged in the elimination of excess weapons-grade plutonium through the provision of tax and other incentives.

Negotiations over multilateral funding of plutonium elimination in Russia began in December 2002. The United States, the United Kingdom, Japan and France announced a total funding commitment of \$800 million. Under the U.S.-Russian Agreement on Plutonium Elimination, the United States promised \$200 million for the Russian part of the program. According to Rosatom estimates, the construction of a MOX fuel production plant in Seversk (Tomsk region) alone will cost about \$1 billion. Meanwhile, the donors insist that all operational costs (about \$1 billion) be met by Russia.

Table 19

U.S. Funding in Russia under the Agreement on Plutonium Elimination		
	Funding	Time Frame
Industrial Plant Design	Up to \$70 million	2000–2003
Industrial Plant Construction	Up to \$130 million	2003–2007

In February 2002, the U.S. Department of Energy published estimates of necessary additional expenditures for the realization of the Russian portion of the program beyond the \$200 million already allotted under the agreement.

Despite the fact that the United States and Russia had reportedly compromised on the civil

liability issue, U.S.-Russian cooperation in the area of plutonium elimination is now in a "suspended state." Two other problems, namely a technology transfer agreement and the question of who should cover MOX-fuel reactor operational costs, remain unresolved. As of January 1, 2005, Rosatom estimated that program costs would total \$2.7 billion.

Table 20

Additional Funding for the Russian Portion of the Weapons-Grade Plutonium Elimination Program (millions of dollars)							
Year	2002	2003	2004	2005	2006	2007	2008
Expenditures in Russia	6.0	20.0	32.4	44.4	45.6	47.0	48.4
Expenditures in the U.S.	13.0	14.0	16.2	22.2	22.8	23.5	24.2
<b>Total</b>	<b>19.0</b>	<b>34.0</b>	<b>48.6</b>	<b>66.6</b>	<b>68.4</b>	<b>70.5</b>	<b>72.6</b>



### The HEU-LEU Agreement

In February 1993, the Russian-U.S. Agreement Concerning the Disposition of Highly Enriched Uranium Extracted from Nuclear Weapons was signed. According to this agreement, 500 tons of Russian HEU (with an average  $U^{235}$  enrichment of 90%) extracted from nuclear weapons would be processed into low-enriched uranium (LEU, with an enrichment level of no more than 20%  $U^{235}$ , in fact the uranium delivered to the United States is enriched to 3.5–4.5%) and sold in the United States for use in power reactors. Initial plans called for Russia to be paid \$12 billion, but later the price of LEU was tied to market prices, and given the price in global natural uranium market the total sum may turn out to be somewhat higher. It was also agreed that:

- the rate of processing HEU into LEU would be 10 tons per year for the first five years of the agreement;
- the rate of processing HEU into LEU would be 30 tons per year in each subsequent year;
- the uranium consigned to the United States would be used exclusively for peaceful purposes;
- the uranium delivered to the United States would be placed under International Atomic Energy Agency (IAEA) safeguards;
- the nuclear materials covered by this agreement would be provided with physical protection at least as strong as that recommended by the IAEA (INFCIRC/225/Rev.2).

The TENEX (Techsnabexport) foreign trade joint stock company was named executor on the Russian side, and the United States Enrichment Corporation (USEC), which was a government corporation at the time the agreement was signed but was privatized in 1996, was named executor on the U.S. side.

The main difficulty in the fulfillment of this agreement has been the question of payment for the natural uranium component of the LEU supplied to the United States. According to the contract which was concluded, the price of the LEU is the sum of two components:

- the cost of enrichment/downblending services (about 2/3 of the sum of the contract); and
- the cost of the natural uranium component (about 1/3 of the sum of the contract).

### Former Minister of Atomic Energy Viktor Mikhailov on the "Birth" of the HEU-LEU Program

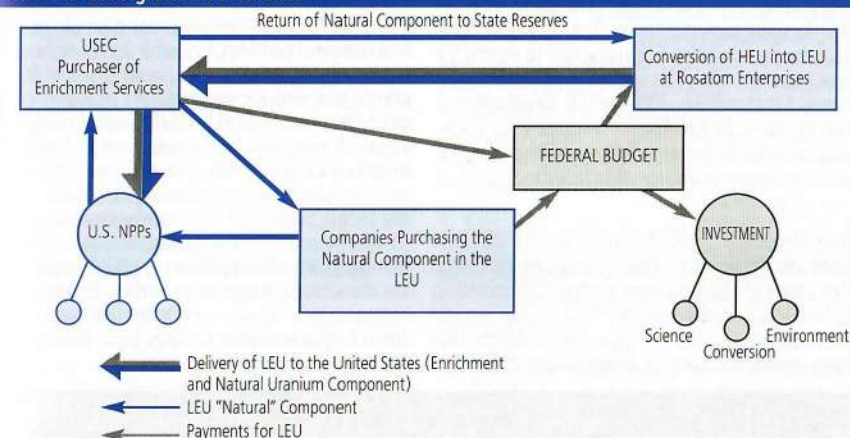


"Yuri Sergeievich Osipov, Max Kampelman (the U.S. representative on arms control issues) and Alex Shusterovich — who translated — came to me. And they suggested a project under which the U.S. would buy the material from the dismantlement of nuclear weapons, the authorship of which the Americans attributed to the physicist Thomas Neff. Although he, it's true, had been trying to buy weapons uranium in the [former Soviet] republics as payment for nuclear weapons dismantlement at laughable prices: 200 tons of uranium for \$2 billion — and we were not interested in that, since it was really worth two and a half times that. I said immediately that we cannot sell you 90% uranium, it's out of the question. We will reprocess it. And they said no, we will. And I said: let's get together a commission of American and Russian experts. Let them examine our technology and yours. And the experts, in their official report, said that the Russian technology for transforming highly enriched uranium into NPP fuel was cheaper than the American. Then we began to look at quantity. We examined all facets of this question. The HEU-LEU Agreement was agreed to by all government agencies. That is how it all began. On February 18, 1993 the agreement was signed. We called this project 'Megatons of Nuclear Explosives into Megawatts of Electric Power for People.'

"The Hawk's Journey," *Soyuznaya Gazeta*, No. 3, March 2003, in *Nuclear.ru*, March 10, 2004.

According to the agreement, USEC pays for the enrichment services within 60 days after delivery, while the payment for the natural component is made after the sale of the low-enriched uranium on the U.S. market or its use at USEC plants. But with the 1996 privatization of USEC and the fall of the world price of natural uranium the U.S. partner refused to buy the natural uranium component. Instead, the natural uranium is remitted to the Russian partner in the form of uranium hexafluoride, or UF<sub>6</sub>, in a quantity equivalent to that contained in the natural uranium sent to the United

### The HEU-LEU Agreement Mechanism



Source: *Techsnabexport website*, <http://www.tenex.ru>

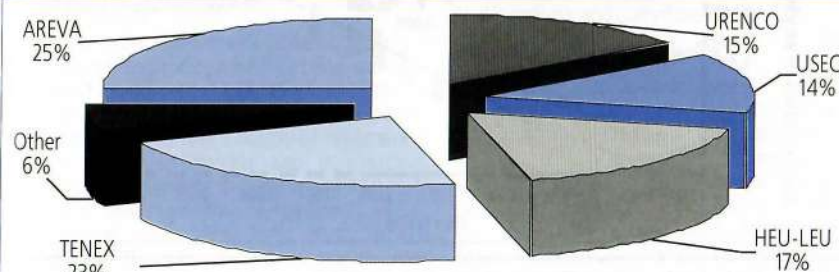
States. According to the March 24, 1999 Agreement Between the United States Department of Energy and the Ministry of the Russian Federation for Atomic Energy Concerning the Transfer of Source Material to the Russian Federation, a portion of this uranium is put into storage in Russia and a portion in the United States. Thus, the natural uranium is sold by TENEX on the world market — either independently, or with the foreign energy companies Cameco, Cogema, or

Nukem serving as intermediaries. The natural uranium in Russian storage is also used for diluting HEU. This LEU coming from the HEU-LEU agreement constitutes a serious share of the world enriched uranium market. See figure 15.

In order to confirm that the LEU being delivered is made from uranium extracted from dismantled nuclear warheads, the United States conducts inspections at the installations involved in the HEU-

Figure 16

### The World Enriched Uranium Market





LEU Agreement. Minatom's commercial interest in the deal caused it to agree to far more intrusive inspections than those that take place in other U.S.-Russian projects. In its turn, Rosatom conducts inspections at U.S. installations to ensure the peaceful use of the LEU sent to the United States. The fact that in 1994–2001 the U.S. Department of Energy spent \$89 million on transparency measures testifies to the significance of this program and, correspondingly, the significance of controls over its fulfillment.

As of October 3, 2005, 255 metric tons of HEU had been downblended under the agreement into 7,472 tons of LEU for power plants. This, according to the USEC, is the equivalent of 10,183 nuclear warheads destroyed. Despite the problems that have arisen, it is hard to overestimate the impor-

tance of this agreement for Russia and for the United States. For the Russian Federation the funds received from the realization of this program make up a significant proportion of the federal budget. The funds from the sale of separate work are consolidated in a special Rosatom budgetary fund, and expenditures are included in the yearly Russian Federal Budget. Several important Rosatom programs are financed out of this fund, including programs directed at fundamental scientific research, new technologies development, the reconstruction of the nuclear weapons complex, creation of new employment, and environmental safety. The program is equally important for the United States as according to some estimates up to 50% of low enriched uranium used in the U.S. power reactors comes from Russia under the HEU-LEU agreement.

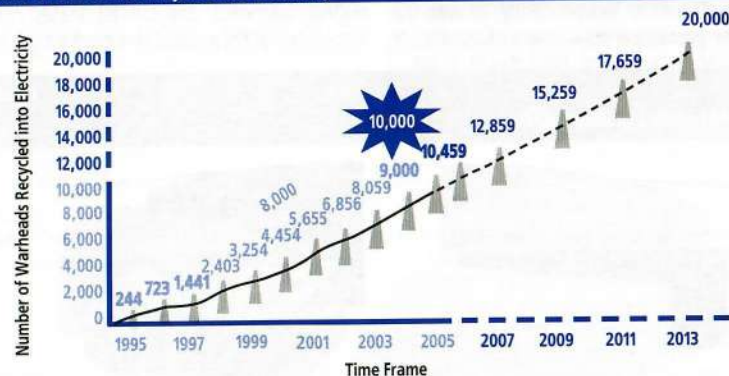
Table 21

## Conversion of HEU into LEU under the HEU-LEU Agreement (metric tons)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
HEU Converted	6	12	18	14.5	21.3	30	30	30	30	30	23
LEU Produced	186	371	480	450	624	858	904	879	906	891	648
Destroyed Warheads	244	479	718	580	872	1200	1200	1200	1203	1202	922

Figure 17

## Number of Warheads Recycled into Electricity



Source: United States Enrichment Corporation website, <http://www.usec.com>

### Weapons-Grade Plutonium Production Reactor Conversion

The Agreement between the Government of the United States of America and the Government of the Russian Federation Concerning the Shutdown of Plutonium Production Reactors and the Cessation of Use of Newly Produced Plutonium for Nuclear Weapons was signed on June 23, 1994. However, Russia has not fulfilled the agreement, since three active plutonium production reactors continue to provide heat and power for nearby "closed" cities – Seversk and Zheleznogorsk. On September 23, 1997, the Agreement Between the Government of the United States of America and the Government of the Russian Federation Concerning Cooperation Regarding Plutonium Production Reactors was signed. According to this agreement, the production of "non-reactor-grade plutonium" at the three reactors still in service was to be halted by December 31, 2000 as a result of modifications to these reactors. The U.S. partner was to provide, subject to the availability of appropriated funds for this purpose, step-by-step funding for cooperative implementation of the necessary reactor modifications. However, this agreement was not fulfilled. According to Rosatom, this was due to a lack of project funding. But Russia was clearly responsible for the breakdown of the agreement as well, since for a long time Rosatom was unable to choose a method for halting weapons-grade plutonium production: conversion of the reactor cores so that weapons-grade plutonium would no longer be produced, or the replacement of the nuclear power plants with fossil fuel power plants. In addition, there were difficulties associated with the question of compensating Russia's Electric Power Company (RAO YeES Rossii) for the cost of an unfinished heat and power plant in Zheleznogorsk.

A Protocol to the Agreement was signed on August 2001, postponing the cessation of plutonium production at the Seversk and Zheleznogorsk reactors until December 31, 2006. The protocol envisaged two possibilities for the creation of replacement power supplies – nuclear and non-nuclear. However, at a later date the decision was taken to replace all three operating reactors with electric power plants using fossil fuels. Many experts believe that should this decision be implemented the "closed" cities of Seversk and Zheleznogorsk

may cease to exist as a clear majority of the population is somehow connected to nuclear industry.

The Agreement Between the Department of Energy of the United States of America and the Ministry of the Russian Federation for Atomic Energy Concerning the Cessation of Plutonium Production at the Operating ADE-4 and ADE-5 Reactors in Seversk (Tomsk Region), and ADE-2 Reactor in Zheleznogorsk (Krasnoyarsk Region) was signed in Vienna (Austria) on March 11, 2003.

In May 2003, the U.S. Department of Energy announced that it would provide \$466 million to fulfill the agreement with Minatom on the shutdown of the three plutonium production reactors. As U.S. Secretary of Energy Spencer Abraham stated, these funds would be used to reconstruct an old power plant and build a new one that would provide heat and electricity to the two Russian cities now served by the plutonium production reactors. Plans call for this work to be completed in Seversk within five years, and in Zheleznogorsk within eight years. However, the cost of these projects is significantly more than the funds committed by the United States, and in order to solve this problem the Americans are working on engaging other foreign partners in the construction of the replacement power plants. In January 2005, the United Kingdom announced that it would contribute \$20 million to the U.S. Department of Energy Elimination of Weapons-Grade Plutonium Production Program to support the shutdown of the reactor in Zheleznogorsk. In February 2005, Switzerland hosted an international conference for potential donor countries. Since that date, Canada has made a commitment of \$7.4 million (March 2005), and the Netherlands has agreed to contribute €1 million (June 2005). In November 2005, Finland decided to co-finance the US-led project in Zheleznogorsk and contribute €0.5 million.

### Biosafety and Biosecurity

This issue is not formally part of the Global Partnership. Russia is generally positive about developing cooperation in the biological area with the West; however, it does not want to do this within the framework of the Global Partnership. Given that the initiative was called the "Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," developing biological cooperation under this framework would imply



that there are biological threats emanating from Russian territory, an allegation that is unacceptable for Russia.

At the same time, the problem of biosafety and biosecurity is becoming increasingly urgent. Developing cooperation in this area is crucial due both to the spread of new contagious diseases like the avian flu and the increased threat of terrorism involving weapons of mass destruction and their components, including those of biological origin.

#### The Russian Foreign Intelligence Service on the Problem of the Proliferation of Biological Weapons

"The noticeable tendency towards the broad spread of biotechnology and the difficulty of controlling the manufacture and use of biological agents and toxins increases the likelihood of the use of biological weapons (BW) by 'third world' countries in local military conflicts, as well as for sabotage and terrorist aims."<sup>7</sup>



The first proved case of bioterrorism is generally considered to be the 1984 incident involving a mass outbreak of *Salmonella typhimurium* in an American town. From that time on, the threat of the terrorist use of biological agents and toxins has been growing.

In the middle of 1990s members of Japanese Aum Shinrikyo (Shining Truth) cult attempted to commit a terrorist attack using biological agents. They experimented with dispersing anthrax spores in public places in Japan. Luckily their attempts failed.

The most recent major terrorist act employing biological weapons occurred in late 2001 in the United States. A powdery substance containing anthrax was spread through the mail causing the deaths of five individuals and the infection of more than 40 others, while several thousand had to undergo a course of strong antibiotics.

The ever increasing spread of scientific and technological knowledge creates fertile conditions for terrorists or other nongovernmental actors to attempt to produce and employ dangerous pathogens.

#### Valentin Yevstigneyev, First Deputy General Director of Biopreparat Company



"The greatest latent threat to the national security of any country is the deliberate terrorist use of natural or artificially created (transgenic) biological agents to infect people, animals, plants and other objects. The unpredictability of the time, target, motive, infectious agent used, and scale of the consequences of a bioterrorist attack are bringing this problem to the fore."

Russia inherited an extensive biotechnology complex from the USSR. The comprehensive BW production program developed by the former Soviet Union was the largest and most developed in the world. Most of the program was hidden under the cover of the activities of the USSR Ministry of Health's civilian organization called Biopreparat, which was created in 1973. Over 40 enterprises were involved in research, development and testing (including atmospheric testing on Vozrozhdeniye island in the Aral Sea), as well as the production of various biological materials. Enterprises involved in the program included those in cities such as Stepnogorsk (Kazakhstan), Berdsk (Novosibirsk region, Russia), Omutninsk (Kirov region, Russia), and Obolensk (Moscow region, Russia). Enterprises under the USSR Ministry of Defense and Ministry of Agriculture were also active. The military compounds that were created included anthrax, smallpox, mustard gas, tularemia, and plague. Western countries maintain that until 1992 Russia was also running an offensive biological weapons program. Presidential decree No. 390 of April 11, 1992, *On Ensuring Fulfillment of International Obligations in the Field of Biological Weapons*, bans the design, production, or stockpiling of bacteriological weapons.<sup>8</sup>

Russia possesses all of the most well-known dangerous biological agents, and also has a unique collection of infectious natural smallpox and other especially dangerous diseases. It is critical to continuously provide a high level of physical security for such collections, since they would pose an immediate threat to national and international security were they to fall into the hands of terrorists. Concern over the security of pathogens at Russian facilities, as well as over possible proliferation risks, are the source of the U.S. interest in rendering Russia assistance in the area of biosecurity. The Russian Government denies the very existence of such a problem, and European countries tend to support Russia in this controversy.

Funding for biosecurity projects under the Global Partnership had been confirmed by France (€5 million), United Kingdom (£200,000 for projects in Georgia), Canada (C\$18 million for 5 years) Sweden (\$130,000) and the United States (over \$55 million for 10 years to fund physical security projects at laboratories and BW nonproliferation work, as well as about \$10 million for projects to find employment for former BW scientists; the first such project is being undertaken in Georgia).

Russia has not formally accepted this funding. It has indicated that while priority areas like chemical weapons destruction or submarine dismantlement remain underfinanced, it is strange that assistance is being aggressively offered in an area where there is no problem.

While aggressive offers of help in the area of biosecurity have failed to convince Russian governmental organizations, foreign donors have found other channels for developing biological cooperation. Today the bulk of cooperation by Western governments is provided by providing funding to Russian research institutes via the International Science and Technology Center, the main recipient of assistance in the area of biosecurity. The ISTC is the main recipient of assistance in the area of biosecurity. In addition to the United States, other countries that have donated or promised modest amounts for projects related to the biological complex include Canada, France, Sweden, and the United Kingdom. As of late 2003, nearly \$130 million had been allocated for research in this sphere through the ISTC. The number of ISTC projects in the biotechnology area that are being carried out in Russia can be seen in the following table.

Table 22  
Biosecurity Assistance Provided to CIS Countries

Country	Funding Commitments	Projects
Canada	C\$18 million for 2003–2008	Some of this money will go to fund ISTC projects in the area of biotechnology
France	€5 million	Security upgrades at facilities using sensitive biotechnology in Russia
Sweden	\$130,000	Biosecurity projects in Russia
United Kingdom	£200,000 for 2003–2004	Increasing biosecurity at the Institute of Plant Protection in Georgia
United States	\$55 million	Security upgrades at facilities that handle sensitive biotechnologies in the CIS states
	\$10 million	Specialist retraining

Source: Presentation by Dr. William Potter, Director of the Center for Nonproliferation Studies, Monterey Institute of International Studies at the international conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," April 23, 2004.

<sup>7</sup> A New Security Challenge After the Cold War: WMD Proliferation. Unclassified report by the Russian Foreign Intelligence Service, 1993, <http://svr.gov.ru/material/2-1.html>

<sup>8</sup> Progress Report on the UK's Programme to Address Nuclear, Chemical, and Biological Legacies in the Former Soviet Union, 2003.



"No effective system of international control has yet been developed to prevent the deliberate use of pathogenic microorganisms in an act of biological terrorism or a military operation, and it is not likely to be created in the foreseeable future. We see that the solution is for the politicians, academics and specialists of various countries who are worried about biological security threats to show wisdom and good will and find the conditions for no-nonsense cooperation in this area, without mutual recriminations or confrontation."

Nikolai Urakov, General Director,  
State Scientific Center of Applied  
Microbiology, Obolensk  
1982-2003

In early 2003, France was one of the first to propose concrete areas of cooperation in the biological sphere. Project proposals sent to the Russian Ministry of Foreign Affairs included the development of up-to-date vaccines and the production of identification equipment based on DNA sequencing. The projects were considered by the relevant Russian Government agencies, however the French proposals' emphasis on joint biological research, a significant part of which had already been conducted in Russia by that time, as well as the absence of serious French initiatives in nuclear-powered submarine dismantlement and chemical weapons destruction (as of early 2003), aroused suspicions that the offers were generated by a desire to acquire Russian technologies rather than a desire to avert common threats.

The other area of possible Franco-Russian cooperation – systems for the detection and identification of biological agents and toxins – are connected to the development of genetic identification methods. The classic, laborious procedure for iden-

tifying pathogenic agents through culturing and subsequent biochemical analysis is extremely ineffective in today's world. Russian DNA technology makes it possible to pinpoint phylogenetic relationships and identify microorganisms at the level of strains, and could be used to create state-of-the-art diagnostic tools.

Under the U.S. Cooperative Threat Reduction program, the United States cooperates with Russia in several areas related to increasing biosecurity:

- physical security of scientific research laboratories and centers that work with dangerous pathogens;
- increasing the security of repositories and laboratories with dangerous viruses, bacteria, and toxins;
- improving the control and accounting system for dangerous biological agents; and
- undertaking the conversion of microbiology facilities used by the military to pharmaceutical and other civilian uses.

It should be noted that the U.S. program of cooperation only includes Russian civilian biotechnology facilities. Facilities subordinated to the Russian Defense Ministry do not participate in U.S.-funded programs for reasons of secrecy.

## The Employment of Weapons Scientists and Prevention of "Brain Drain"

### The Scale of the Problem

Most of the enterprises in the Russian nuclear weapons complex are concentrated in Federal Atomic Energy Agency closed administrative-territorial units (ZATOs), often called "closed cities," with a total population of approximately 760,000. Although only a small portion of the inhabitants work at military enterprises, these enterprises are the sole basis for the local economies, and determine the condition of the closed city to a significant degree.

About 75,000 people are employed at defense enterprises in the nuclear sphere, including enterprises in the nuclear weapons complex that are located outside the borders of closed cities. Of this number, according to western estimates, 2,000–4,000 people have critical information about nuclear weapons and their production, while another 10,000–15,000 carry out important auxiliary functions. These estimates are considerably lower than the widespread suppositions regarding tens of thousands of specialists capable of sharply accelerating nuclear weapons programs in states of concern.

Military nuclear programs are currently being downsized. Those closed cities with enterprises

What concerns bilateral cooperation involving Russian governmental structures there have been both success and failure stories.

Table 23  
ISTC Projects in Russia in the Biological and Biosecurity Sphere (as of August 2005)<sup>a</sup>

Project Area	Number of Projects
Biochemistry	100
Cytology, Genetics, and Molecular Biology	107
Ecology	68
Immunology	86
Microbiology	110
Nutrition	7
Other	33
Pathology	26
Pharmacology	80
Physiology	20
Public Health	186
Radiobiology	57
<b>Total</b>	<b>880</b>

<sup>a</sup> Data from the ISTC Website, <http://tech-db.istc.ru/ISTC/sc.nsf/html/projects-all-by-tech.html>

Figure 18  
Russia's "Closed" Nuclear Cities





involved in the nuclear fuel cycle are able to restructure to carry out peaceful commercial programs relatively easily. Conversely, centers for the assembly and disassembly of nuclear munitions are the most likely to face social crises. The possibilities for the creation of commercial production in these places are slight. Scientific centers find themselves in an intermediate position.

The Russian Government is striving to create new jobs and realign existing jobs in the "closed" nuclear cities. However, these efforts are far from sufficient. Thus, international assistance in this sphere is critical.

Russian chemical and biological production and research facilities are located in both "closed," hard-to-reach places and major centers. The number of specialists that truly have sensitive information that could facilitate the proliferation of chemical and biological weapons is estimated to be from five to ten thousand individuals. Thus, the number of specialists active in civilian research who know

"sensitive" information in the biological and chemical sphere is significantly greater than those in the nuclear sphere.

In total, we are talking about the necessity of finding worthy employment for about 7,000–12,000 highly qualified scientists and engineers. But this is just one aspect of the problem. The difficult socioeconomic conditions in the military research and military production complexes may provoke employees in these enterprises to steal weapons materials, weapons components, or technical documentation. It would be quite dangerous if these materials, particularly hazardous biological or nuclear materials, should find their way into the hands of terrorist groups or "states of concern." Another aspect of problem is that there is no single governmental agency in charge of former weapon scientists' redirection in Russia, and the ISTC, which is very active in this area, is now changing its concept of redirection and increasingly stresses part-time employment for former weapon scientists and commercialization of scientific research.

Table 24

#### The Specialization of Russian Federal Atomic Energy Agency "Closed Cities"

City	Specialization
Lesnoy (Sverdlovsk-45)	Nuclear warhead assembly and dismantlement
Novouralsk (Sverdlovsk-44)	Nuclear fuel cycle complex
Ozersk (Chelyabinsk-65)	Nuclear fuel cycle complex
Sarov (Arzamas-16)	Nuclear weapons research, design and development; nuclear weapons and component stewardship; nuclear warhead assembly and dismantlement
Seversk (Tomsk-7)	Nuclear fuel cycle complex
Snezhinsk (Chelyabinsk-70)	Nuclear warhead research and design; assembly, disassembly and testing of experimental and prototype warheads
Trekhgornyy (Zlatoust-36)	Nuclear warhead assembly and dismantlement
Zarechnyy (Penza-19)	Nuclear warhead assembly and dismantlement
Zelenogorsk (Krasnoyarsk-45)	Uranium enrichment/downblending enterprise
Zheleznogorsk (Krasnoyarsk-26)	Nuclear fuel cycle complex

Source: Jon Wolfsthal, Cristina Chuen, Emily Ewell Daughtry (eds.). *Nuclear Status Report: Nuclear Weapons, Fissile Material, and Export Controls in the Former Soviet Union*. Carnegie Endowment for International Peace and MIIS, 2001.

#### Programs to Assist Russia in Preventing "Brain Drain"

The following international assistance programs are under way or planned:

- Global Initiatives for Proliferation Prevention (United States), previously called the Russian Transition Initiative;
- International Science and Technology Center;
- U.S. Civilian Research & Development Foundation (CRDF);
- European Nuclear Cities Initiative;
- UK Closed Nuclear Cities Partnership (CNCPC).

#### Global Initiatives for Proliferation Prevention (former Russian Transition Initiative)

In 2002, the Russian Transition Initiative combined the two most important "brain drain" prevention programs being carried out by the U.S. Department of Energy: the Initiative for Proliferation Prevention and the Nuclear Cities Initiative (discussed further, below). Funding for the programs is given in the following table. In 2005, the U.S. Department of Energy once again changed the name of this program, to the Global Initiatives for Proliferation Prevention. The U.S. Congress, however, has yet to agree to this name change.

Table 25

#### Global Initiative for Proliferation Prevention Funding (in millions of dollars)

FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006 (request)
50.759	57.0	39.224	39.764	40.675	37.890

#### Initiative for Proliferation Prevention

In 1994, the U.S. Department of Energy initiated the Industrial Partnership Program. In 1996 it was renamed the Initiative for Proliferation Prevention (IPP). This program funds projects in Ukraine, Kazakhstan, and Belarus, as well as Russia, though the majority of the funds have been allocated to Russia. About 70% of the projects realized under this program have been in the nuclear area; the rest in the chemical and biological spheres.

In the short run the IPP was intended to provide civilian projects for military scientists. In the long term, the program plans to create permanent high-tech jobs for military scientists in commercial

enterprises. The private sector is to be engaged in this effort as well. The projects realized under the program are supposed to be profitable for both the United States and its partners in the former Soviet Union. But the program's main goal is to reduce the threat of proliferation. One of the key conditions for receiving project funding is that a significant number of its participants had worked in designing or producing nuclear, biological, or chemical weapons.

Over 400 projects have been implemented under the IPP, engaging 170 organizations from the former Soviet Union and involving nearly 11,000 former Soviet scientists. Private U.S. companies invested about \$101 million in 132 projects, while the U.S. Department of Energy invested about \$69.3 million. However, only eight projects met with commercial success, with sales of \$17.2 million. These projects resulted in 294 permanent new jobs. In February 1999, the U.S. Government Accounting Office (GAO) published a report on the implementation of this program that came to some very critical conclusions. It noted that only 37% of the funds allocated for the program were spent in the former Soviet states. After the publication of this report Washington decided that no less than 50% of the funds allocated should be spent in the countries receiving assistance.

Table 26

#### IPP Funding, by Country

Recipient Country	Percentage of Funding
Russia	84%
Ukraine	9%
Kazakhstan	4%
Belarus	3%



1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
35	0	20	29.6	29.6	22.5	24.5	24.1	36.0	22.5

\* Since 2003, IPP funding has been subsumed under the Russian Transition Initiatives budget line.

In addition, the report noted that:

- there was a lack of stable funding and strategic planning;
- there were very few commercially viable projects;
- oversight of project performance by U.S. managers was weak, and the information provided by Russian Government agencies, particularly about project participants, was insufficient; and
- there was no guarantee of the irreversibility of conversion of specialists from military to civilian research; the combination of IPP work and military research had taken place, robbing the program of all meaning.

#### Nuclear Cities Initiative

This program was launched in 1998 after the signing of a corresponding agreement between the Russian Ministry of Atomic Energy and the U.S. Department of Energy. Its primary aim was the creation of new jobs for specialists who had been involved in the design and production of weapons of mass destruction in the past. Two additional program goals were:

- the reduction of the nuclear weapons complex; and
- the establishment of the institutions of civil society in the "closed cities."

In the beginning, the Nuclear Cities Initiative was implemented in Sarov, Snezhinsk and Zheleznogorsk. Initially, efforts were directed at designing strategic development plans and improving the investment climate, and, above all, on infrastructure development. Some of the most significant projects under the program were:

- the creation of a computing center in Sarov, providing about 40% of the new jobs created under the Initiative;
- the conversion of several buildings owned by the Electromechanical Plant in Avangard to the production of medical equipment, via a joint venture company with the German firm Fresenius;
- the creation of international development centers in Snezhinsk and Zheleznogorsk, to find solutions to three fundamental questions holding back the development of business in the "closed" cities: a lack of information about external markets, insufficient practical experience doing business in a free market, and a shortage of capital.

In its first two years the program met with limited success. Only 370 individuals were given work, and many of them combined working on NCI projects with work under the state defense order.

Generally speaking, the chief difficulties faced by this program coincided with those faced by IPP. About half of the 26 projects were aimed at

Financial Year	1999	2000	2001	2002	2003
Funding	15	7.5	27.5	21	16.6

\* Since 2003, NCI funding has been subsumed under the Russian Transition Initiatives budget line.

improving the social assets and civil society inside the "closed" cities, which the U.S. Department of Energy believed would help improve the investment climate there. This frustrated Russian Government agencies, which believed that attractiveness to investors does not depend on the level of social infrastructure. Furthermore, a large por-

tion of the funds committed to the program were spent in the United States, although it would seem they ought to have been spent in Russia's closed scientific centers.

Since the summer of 2003, program funding has been "hung up".

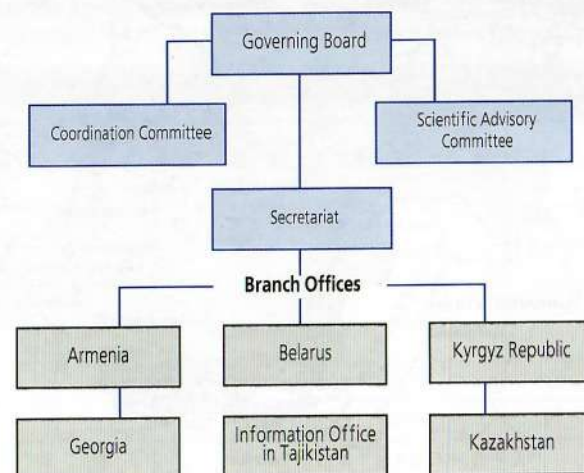
U.S. National Laboratories	67%
U.S. Department of Energy Administrative Costs	3%
Russia	30%

#### International Science and Technology Center

The International Science and Technology Center (ISTC) was established in 1992 by the European Union, Japan, the Russian Federation, and the United States. They were later joined by Canada, Norway, and South Korea, while recipient nations were expanded to include Armenia, Belarus, Georgia, Kazakhstan, and Kyrgyzstan.

The Russian institutes most active in ISTC cooperation are: the All-Russian Scientific Research Institute of Experimental Physics, the All-Russian Scientific Research Institute of Theoretical Physics, Vector State Scientific Center of Virology and Biotechnology, the Bochvar All-Russian Scientific Research Institute for Inorganic Materials, the Institute of Physics and Power Engineering, and the Moscow Engineering and Physics Institute.

#### ISTC Organizational Structure





## Main ISTC Goals

- Provide weapons scientists in the CIS the opportunity to redirect their talents to peaceful activities
- Contribute to solving national and international technical problems
- Contribute to the transition to market-based economies
- Support basic and applied research and technology development
- Foster the integration of scientists and engineers from CIS states into the global scientific community

The ISTC Partner and Sustainability Department's Commercialization Support Program acts to bring together foreign commercial organizations and CIS scientists. This helps private industry, scientific institutes, and government agencies to fund scientific research at institutes in the newly independent states. ISTC cooperation provides the opportunity for scientific research projects in Russia and the other CIS states to take advantage of developed infrastructure, and also exempts grant payments

**Table 30**  
Distribution of ISTC Funding by Technology Area, 1994–2004

Technology Area	Total Funding
Biotechnology and Life Sciences	169,951,155.44
Chemistry	32,282,824.14
Environment	97,862,489.44
Fission Reactors	66,691,711.18
Fusion	12,549,321.34
Information and Communications	23,144,683.74
Instrumentation	30,632,251.41
Manufacturing Technology	19,306,236.90
Materials	55,088,037.37
Non-Nuclear Energy	16,984,058.61
Other	4,014,116.00
Other Basic Sciences	4,889,617.00
Physics	77,050,948.59
Space, Aircraft and Surface Transportation	24,396,723.98
<b>Total Funding</b>	<b>634,844,175.14</b>

Figure 20

## ISTC Project Geography



**Table 31**  
U.S. Funding of the STCs in Russia and Ukraine /BW Redirection in FY 2001–2004 (in millions of dollars)

2001	2002 (estimate)	2003	2004
35	37	52	50.2

and imported equipment and materials from taxes and duties. By 2005, over 200 large private and governmental industrial and research organization from Europe, the United States, Japan and the Republic of Korea were on the list of ISTC partners.

As of the end of 2004, 2,120 projects had received over \$634 million in ISTC funding, of which some \$183.5 million was allocated by ISTC partners. The sources for the ISTC funding are represented in the table 31.

**Table 32**  
Sources of New ISTC Funding in 2004

Funding Source	Funding	Percentage
Canada	8,164,926	15.5
European Union	16,066,440	28.6
Japan	1,798,075	3.2
South Korea	280,000	0.5
United States	7,960,611	14.2
Partners	21,542,388	37.8
Other	150,000	0.2
<b>Total</b>	<b>55,962,440</b>	<b>100</b>

The ISTC does not require funding recipients to retire from military enterprises. A lot of the scientists involved in ISTC projects spent no more than one-fourth of their time working on them in 2000.

**Table 33**  
Time Spent by Russian Scientists on Work Funded by ISTC Grants

Time	Number of Scientists	%
1–25 days	7,715	36.2
26–50 days	4,435	20.8
51–75 days	2,959	13.9
76–100 days	2,372	11.1
101–150 days	1,994	9.4
151–200 days	1,222	5.7
Over 200 days	576	2.9
<b>Total</b>	<b>21,273</b>	<b>100</b>



### CERN-ISTC: An Example of International Cooperation

The European Center for Nuclear Research (CERN) and the European Union have provided over \$5 million for a series of nine ISTC projects contributing to the ATLAS detector facility at CERN. These projects include the participation of leading physics research institutions in Russia and Armenia: Institute of High Energy Physics (Protvino); Joint Institute of Nuclear Research (Dubna); VNIITF (Snezhinsk); VNIIEF (Sarov); the Moscow Engineering and Physics Institute (Moscow); Yerevan Physics Institute (Yerevan).

*"International collaboration is a strong force of CERN. By pooling intellectual and financial resources, national universities and institutes can stay at the forefront of modern research through the scientific network centered on CERN experiments. The ISTC has been central to including leading Russian and CIS scientists in CERN's progress."*

Prof. Luciano Maiani,  
Director-General, CERN

#### Building 887: An Aladdin's Cave for Physicists

"Building 887 ... is home to numerous experiments bringing together physicists and engineers from around the world. Its diversity makes the huge building a replica of CERN in miniature.

The big wheel to be used for the ATLAS muon chambers is much the most spectacular installation currently occupying Building 887. But it is far from being the only attraction. Push open the heavy doors of this immense hall and it is a bit like entering a physicists' Aladdin's cave. The building, 55 meters wide and 300 meters

long, is a treasure trove of engineering and technology, a CERN in miniature, housing dozens of collaborations from all over the world. With its 15,000 square meters, it is the largest hall in CERN, and has room for great numbers of experiments in search of space.

Experimental groups certainly beat a path to their door. Every year, physicists and engineers of all nations arrive. Some stay only a few days, others settle in for years at a time. Some arrive with their own logistical back-up, others arrive without a thing to their name. Fortunately, the 'hotelkeepers' of Building 887 are remarkably helpful."

#### ATLAS Big-Wheel becomes a reality

"A prototype of one of the eight sections that will form one of the big-wheels of the ATLAS muon spectrometer has been installed in Building 887. A 10 meter-high construction, it weighs about 2.5 metric tons. Imagine a circle made of eight pieces that size, and you'll soon get an idea of the scale of what will become the world's biggest support structure for tracking devices.

The colossal metal frame was built in the framework of an ISTC contract a Russian defense laboratory at Snezhinsk in the Ural Mountains, which is now repositioning itself to cover civilian applications. Its completion marks a success for the team that designed it as the support of tracking chambers in a comprehensive test of the ATLAS muon system. Over 40 institutes in 11 countries are involved in the construction of the ATLAS muon spectrometer."

Excerpts from CERN Bulletin No. 29, 2001

### U.S. Civilian Research and Development Foundation (CRDF)

The U.S. Civilian Research and Development Foundation participates in several programs to redirect scientists who work in the military sphere to civilian research. The fund evaluates projects sent to the International Science and Technology Center (ISTC) for consideration, and assists scientists from the former Soviet Union in making contact with partners in the United States. The foundation also provides grants for joint research. One the requirements for receiving a grant is the commitment to spend at least 80% of the received moneys to fund participants in the former Soviet states.

### European Nuclear Cities Initiative

Under the European Nuclear Cities Initiative, several "small-size projects" are planned for Snezhinsk and Sarov, to provide consulting or service activities in coordination with potential end-users or under their direction. An international working group has been created under this initiative. Its goals include:

- a survey of past and present activities undertaken to solve the problem of "closed" cities, and the development of proposals to unite the efforts of the various programs and projects;
- the identification of possible donors and funding mechanisms to support initiative efforts in conversion and the creation of new jobs in the "closed" cities.

### UK-R.F. Closed Nuclear Cities Partnership (CNCP)

The United Kingdom has committed to allocating £13.5 million for the Closed Nuclear Cities Partnership from 2001–2006. The program, which is being managed by HTSPE Ltd., is aimed at providing non-weapons employment for former weapons scientists and facilitating the commercialization of Russia's closed cities through the facilitation of leadership development and knowledge transfer. The CNCP is working with six cities: Sarov, Seversk, Snezhinsk, Ozersk, Zheleznogorsk, and Novouralsk. Partnership activities are primarily focused in four areas: grant aid for investments in sustainable civil sector commercial activities (market research and business planning, product development, start-up, pilot production, and industrial expansion), training (in technology commercialization, innovation, and business negotiation and marketing), commercial partnerships (between organizations in closed cities and British or other foreign companies), and local economic development (the establishment of business development agencies in closed cities). No less than 55% of the jobs created under the partnership are to be filled by former weapons complex staff. As of December 2005, a £4 million portfolio of projects to maintain the momentum of providing sustainable, non-weapons employment for former weapons scientists and technicians was being implemented. A total of 22 projects in the five Russian cities (Snezhinsk, Sarov, Seversk, Zheleznogorsk and Ozersk) were underway, with a

further 19 projects under preparation. According to the United Kingdom estimates, these projects will potentially create up to a total of 600 new jobs. So far 143 for former nuclear scientists and 58 jobs for former nuclear technicians have been created.

### Export Control

The following tasks must be undertaken in order to create an effective export control system:

- a regulatory regime must be created;
- institutional mechanisms must be developed to ensure the implementation of export control rules;
- border stations and customs posts must be provided with the necessary technical means; and
- personnel in industrial enterprises, foreign trade organizations and government agencies must be trained in export control rules.

In undertaking these tasks Russia made use of the experience of developed nations. Their assistance, nearly exclusively from the United States, was provided in three areas:

- advice regarding legal, procedural, technical and other issues related to the creation an functioning of an export control system;
- the supply of radiation detection equipment for customs and border posts (through the so-called "Second Line of Defense" program); and
- the training of personnel responsible for export control.

### The Russian Export Control System

The creation of a modern export control system in Russia began with President Boris Yeltsin's signature on Decree No. 388 of June 11, 1992, *On Measures to Establish an Export Control System in Russia*. The main components of this system were created in the 1990s. These include the establishment of the interagency Export Control Commission; the elaboration and confirmation of lists of materials, installations, equipment, scientific and technical information, activities, services, and intellectual property subject to export controls; and the adoption of legislative rules to regulate foreign trade activities, including a list of controlled products.



### Regulatory Regime

One of the crucial points in the formation of the Russian export control system was the adoption of the Russian Federation Penal Code in 1996. It set penalties for violating export control rules. Thus, Article 189 is dedicated to the illegal export of technology, scientific and technical information and services, raw materials, and equipment that could be used in the creation of weapons of mass destruction, armaments, and military hardware, and establishes special export controls over these items. In this article, it states that the illegal export of such products is punishable either by a heavy fine or by incarceration of from three to seven years.

Export controls are also directly dealt with in Penal Code Article 188 (On Contraband), Article 220 (On the Illegal Trafficking of Nuclear and Radioactive Materials), Article 283 (On the Disclosure of State Secrets), and Article 355 (On the Production and Proliferation of Weapons of Mass Destruction). The illegal export or transfer of controlled products is punishable by heavy fines and in certain cases prison terms of up to 10 years.

A complete export control system was created with the adoption of the law *On Export Control* in 1999. In particular, this law gives a precise legal definition of what controlled goods and technologies are. Article 1 of the law defines goods subject to export controls as raw materials, goods, equipment, scientific and technical information, work, services, and the results of intellectual activity that could be used in the development of weapons of mass destruction, their delivery systems, and other types of weapons and military equipment. In contrast Article 189 of the Penal Code of Russia, the law *On Export Control* considers the results of intellectual activity to be subject to export controls.

The law determines the legal bases for Russia's export control system, including:

- the means to observe the Russian Federation's international obligations pertaining to the non-proliferation of weapons of mass destruction and their delivery systems and to the control of exports of military and dual-use products;
- the fundamental principles of Russian policy in this area;

- the methods of conducting export control, including the legal means for realizing foreign economic transactions with controlled goods and technologies;
- the delimitation of the powers of government institutions and other principal components of the export control system.

The law *On Export Control* is the basis for the development of norms and procedures that were initiated by presidential decrees and government resolutions; together these form the legal basis for the Russian export control system. For instance, several presidential decrees and government resolutions define the purview of executive agencies in this sphere. These include the 2000 Presidential Decree No. 867 *On the Structure of Federal Executive Bodies*. The Ministry of Economic Development and Trade (MERT) was formed in accordance with this decree; this ministry has been given authority over the implementation of export controls.

In 2000, the Ministry of Economic Development and Trade (MERT) became the leading Russian agency in the area of export control. Its functions included the issuance of export licenses. The Department of Export Control (DEK), with power over issuing export licensing for items subject to control, was created under MERT in order to exercise the ministry's export control functions. In addition, MERT functions included the organization of the state evaluation of goods, technologies, and services subject to export control, as well as the review and approval of internal export control compliance programs within enterprises.

The 2004 government reforms transferred export control functions to the newly created Federal Technical and Export Control Service, under the Russian Ministry of Defense.

### Control Lists

In the 1990s, Russia approved six control lists that corresponded to international nonproliferation regimes. They covered:

- nuclear materials, equipment, special nonnuclear materials, and corresponding technologies;
- dual-use equipment, materials and technologies that could be used for nuclear purposes;
- pathogens, their genetic variations, and fragments of genetic materials and equipment that

could be used for the creation of biological weapons;

- chemical substances, equipment and technologies which have peaceful purposes but can be used to develop chemical weapons;
- equipment, materials, and technologies used in the production of missiles; and
- dual-use goods and technologies, the export of which is controlled.

These lists not only list the name, but also the technical characteristics of the product subject to control. The corresponding measures also cover the information and results of intellectual activity relating to weapons of mass destruction in order to prevent the transfer of "intangible" technology via training, consulting, scientific reports and lectures.

Government agencies responsible for various industrial and scientific branches send their proposals regarding the content of control lists. The lists, and any changes or additions to them, are submitted by the national government and approved by presidential decree.

### The Principle of Catch-All Controls

The provisions for catch-all controls, introduced by the Russian government in 1998 in response to U.S. pressure aimed at ensuring effective export controls vis-à-vis Iran and Iraq, are of fundamental importance. Catch-all controls make it possible to reduce gaps in control lists to a minimum. The essence of these controls, as formulated by Article 20 in the law *On Export Control*, is:

- Russian entities are prohibited from participating in foreign economic transactions or the trade of goods and technologies in any way if they have "reason to believe" that they will be used "by foreign states or foreign persons" for the production of weapons of mass destruction and their delivery systems;
- Russian participants in foreign economic transactions must obtain permits, according to established procedures, to conduct foreign economic operations with goods and technologies not covered by control lists if:
  - they have been notified by the special authorized federal agency of the executive branch in the sphere of export control that these goods and technologies may be used for the pro-

duction of weapons of mass destruction and their delivery systems, and

- they have reason to believe that these goods and technologies may be used for the above purposes.

Export organizations are prohibited from conducting export operations if they "have reason to believe" that the products being exported, which are not included in control lists, may be used for the creation of weapons of mass destruction, etc. Article 18 of the law *On Export Control*, which requires the foreign party, that is, the importer, to provide a written commitment that the goods and technologies will not be used in the development of weapons of mass destruction and their delivery systems does not relieve the exporter of the aforementioned obligation. If the importer intends to use goods or technologies for the development of WMD, he or she is likely to try to hide this intention. This leads to the question of how much information exporting organizations have to judge competently whom they are dealing with when they enter an export deal.

In order to assist them, in May 1998, two lists were circulated. The first was aimed at military enterprises and contained a list of end users with whom deals require the preliminary agreement of competent authorities dealing with the control of "sensitive" technologies. The second was sent to government agencies involved in export controls. This latter document contained a list, prepared by the Federal Security Service (FSB), of foreign companies that participate in military programs for the creation of weapons of mass destruction and their delivery systems.

There is a fundamental weakness in Russian laws on catch-all controls, however. It is extremely difficult for a state agency to prove that a Russian exporter "knew" or had "reason to believe" that the products they were supplying could be used for the creation of weapons of mass destruction or their delivery systems.

### Licensing Procedures

There are two types of export licenses in Russia: general and one-time licenses. One-time licenses are issued for a single, concrete export operation, while general licenses allow an enterprise to export a particular good on multiple occasions, stipulating



only the volume to be exported, without indicating the buyer. General licenses for controlled goods were introduced by the 1999 law *On Export Control*; the procedure for obtaining this sort of license is quite involved. They are issued by government decision, and the enterprise must first have an internal export control compliance program that has been accredited by the government. An enterprise possessing a general license must provide a report on its use each quarter. If the goods being exported pertain to nuclear energy, a copy of these reports must be sent to the Ministry of Atomic Energy (now Rosatom). Licenses can be issued for periods of up to 12 months.

The process of considering applications for export licenses consists of several stages. They include enterprise in-house review, review at the ministerial (or agency) level, and review at the interagency level.

Enterprise in-house review is realized as part of a firm's internal export control compliance program. The law *On Export Control* defines internal export control compliance programs as a complex of organizational, administrative, informational, and other measures carried out by organizations in order to ensure that export control rules are followed. These programs must go through state accreditation. Their creation is mandatory for organizations that conduct scientific and/or production activity to ensure Russia's defensive capabilities and security and regularly earn income from foreign economic transactions with controlled goods and technologies. To the extent possible, they take the type of enterprise, its scale, structure, and the character of its export activities into account.

The most important function of internal export control compliance programs is identification, or the collation of the physical and technical characteristics of the prospective export products with their possible use in accord with control lists. This is a critical step, since the exporter is responsible for the accuracy of the classification, evaluation of the end user, and fulfillment of export procedures. If a mistake is made in the identification stage, even if it is unintended, the enterprise is legally and financially liable.

The majority of Russian exporters that deal in the export of controlled goods are either fully or par-

tially under the jurisdiction of a federal agency. Therefore the next step in the licensing process is the review of documents by the corresponding agency. The latter evaluates the financial desirability and legal foundation for each export operation. They have special control boards or committees for these purposes.

After this an application for a license is sent to the Federal Technical and Export Control Service, and from there for government evaluation to the agencies concerned, depending on the concrete control list involved. The evaluation determines whether the good, equipment, etc. to be exported has a use related to weapons of mass destruction, whether it runs counter to Russia's economic or other interests, and whether the export may violate any international regimes or agreements to which Russia is a party.

A license may not be issued if there is any incorrect, distorted, or incomplete information in the documents provided; if the government evaluation is negative; or if a foreign economic transaction involving goods, information, work, services, or results of intellectual activity may harm or give rise to a threat of harm to the interests of the Russian Federation.

### Customs Control and Customs Clearance

Customs control and customs clearance are basic export control methods. The customs authorities' ability to monitor the observance of transit rules when goods subject to export control cross the customs border has a direct impact on the national security of the Russian Federation and its fulfillment of international obligations. Therefore, customs control is the most important and effective government tool for ensuring that the illegal transfer of controlled goods is exposed and suppressed.

According to export control legislation, a license issued by authorized federal export control agencies is required for dual-use goods and technologies to receive customs clearance. Before the controlled goods actually cross the border the license holder must present the original license for registration at the customs office in the region where he/she is legally registered. Only after this is done are the goods cleared by customs and released. Information on the registered licenses is sent to the main customs computing center so that the expiration of the quotas (quantities) allowed for the

transfer of particular goods under a particular license can be monitored. The customs clearance of controlled goods for which a license has been received does not pose any difficulties for customs bodies. The difficulty lies in identifying the controlled goods amongst the general flow of goods crossing the border that have been declared to be goods that are not on control lists.

It is still too early to say that Russian enterprises that are involved in foreign economic transactions strictly adhere to export control legislation, since they are first and foremost concerned with economic issues.

In addition, those working at enterprises that deal in foreign trade show a general lack of knowledge that of export control rules. Thus, there is the classic collection of reasons for violations of export control legislation.

The difficulties customs officials have in understanding and embracing control lists and their lack of specialized scientific knowledge, combined with the every-day Russian realities discussed above, opens up a wide range of prospects for the illegal trans-border trafficking of controlled goods.

In order to improve the effectiveness of customs operations, a system of independent classification was set up. The system was created at the initiative and with the direct participation of the Russian State Customs Committee under the overall leadership of the Ministry of Economic Development and Trade's Department of Export Control. The principles on which the system is based were confirmed in the law *On Export Control*.

The aim of the independent classification system is to provide customs authorities with analytical support in evaluating goods, determining if goods that have been presented for customs clearance are indeed subject to export controls.

The procedures for the customs clearance of dual-use goods and technologies were set up 12 years ago, when the export control system was formed. The entry into force of the new Russian Federation Customs Code required the alteration of these procedures to reflect the new principles of customs control, based on a system of risk management.

Russian State Customs Committee Decree No. 1545 *On Improving the Effectiveness of Customs Authorities*

*in the Area of Export Control* entered into force on December 26, 2003. This decree established the procedures for clearing declarations, minimizing the risk that Russian export control legislation would be violated and controlled goods illegally exported. These procedures are based on the evaluation of risk indicators, the presence of which requires that customs officials undertake corresponding analyses.

These procedures may be thought of as a preliminary filtering of the trade flow in order to identify those goods requiring export control. Today the customs authorities have the legal right to undertake evaluations of the information in customs declarations during the course of four months if the declared good has indications that it may belong to a category controlled by the export control system.

### U.S.-Russian Cooperation in the Area of Export Controls

U.S. export control assistance programs in Russia are overseen by several agencies, each with its own programs. The Department of Energy, Department of Commerce, and the State Department have the most active role in this sphere.

The State Department, chiefly through the Bureau of Nonproliferation's Office of Export Control Cooperation, provides technical and material support in the area of export control as part of its overall nonproliferation program. These activities include assistance in five core areas:

- **Laws and Regulations:** assistance in drafting and implementing new comprehensive export control laws;
- **Licensing:** improvement of licensing procedures, and the development and implementation of internal compliance export control programs at exporting enterprises of particular concern;
- **Enforcement:** including the provision of training and equipment to detect weapons of mass destruction and apprehend violators;
- **Government-Industry Cooperation:** such as the provision and installation of software and system support tools for information networks and databases on export control (like the Tracker Export Control System for the licensing of dangerous weapons and chemicals);



- Interagency Cooperation Coordination: training of customs officials in Russia and throughout the CIS states.

In addition, the U.S. State Department assists in organizing U.S.-Russian meetings, working groups, and conferences. It also provides additional funding for the corresponding offices under the U.S. Departments of Commerce and Energy through Nonproliferation, Antiterrorism, De-mining, and Related activities (NADR) funds. NADR

was established in 1999 in order to increase cooperation with Russia and other former Soviet states in the sphere of nonproliferation, including export controls.

In 1994, the U.S. State Department created the Nonproliferation and Disarmament Fund on the basis of the Freedom Support Act of 1992. In 1994–1996, half of the fund's budget was dedicated to export controls.

Table 34

## Nonproliferation and Disarmament Fund (in millions)

Fiscal Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006*
Funding	\$10	\$10	\$20	\$15	\$15	\$14.99	\$15	\$14.97	\$14	\$14.9	\$29.8	\$39.2	\$37.5

\* Request

The funding intended for individual countries is determined as work proceeds, so it is difficult to summarize the amount of assistance given to Russia each year. According to the U.S. State Department, in FY 1998–2001 the amount expended on export control assistance to Russia by the State Department totaled \$12 million. In FY

2002, \$5 million were extended for this purpose, and in FY 2003, \$10 million. In FY 2004, \$1.8 million were spent through the NADR account on export control, in FY 2005 an estimated \$2.8 million would be spent through the same account, while \$1 million has been requested in FY 2006 for this purpose.

Table 35

## Export Control Assistance Funded by the U.S. State Department, FY 2001–2006 (in millions of dollars)

Program Year	2001		2002		2003		2004		2005		2006	
	Total	Russia	Total	Russia	Total	Russia	Total	Russia	Total	Russia	Total	Russia
NADR	19.1	1.5	41.7	1.5	36.0	5.0	35.8	1.8	37.7	2.8*	44.4	1.0**
Freedom Support Act	21.0	3.5	21.0	3.5	40.0	10.0						
<b>Total</b>	<b>40.1</b>	<b>5.0</b>	<b>62.7</b>	<b>5.0</b>	<b>76.0</b>	<b>15.0</b>						

\* Estimated

\*\* Requested

Cooperation between the U.S. Department of Energy and Russia began in 1996, when the National Nuclear Security Administration's Office of Export Control Policy and Cooperation signed a Letter of Cooperation in the area of export controls with the

Russian Ministry of Atomic Energy. The letter designated four areas of bilateral cooperation:

- scientific analysis of control lists of the nuclear multilateral export control regimes;

- training in export control for Minatom enterprises;
- exchanges of experience and knowledge in seminars and consultations; and
- development of internal compliance programs for Minatom enterprises.

The U.S. Department of Energy identified a range of activities in the area of export control for its Russian program. Two of them are being successfully realized: assistance in designing internal compliance programs for enterprises and developing stricter licensing procedures. Since 1996, the U.S. Department of Energy has helped to conduct national and regional exchanges, as well as publish and distribute informational materials designed to increase Russian enterprises' familiarization with nuclear and dual-use equipment. This helps to enhance awareness of export control issues and goals, increase assimilation of international experience in this sphere, improve Russian exporters' ability to understand their legal accountability, and heighten the level of technical training that is needed to successfully compile technical descriptions and precisely identify export products.

The Office of Export Control Policy and Cooperation also cooperates with the Russian State Customs Committee. The Customs Committee gives high marks to its cooperation with the United States in creating training programs and program materials for customs authorities.

For example, in 2003, seven seminars were held under the training program for the identification of goods subject to export controls for employees of customs authorities, two at a national level. The program resonated widely. In 2004, another 10 seminars for customs authorities were held under the program. In addition, an electronic search system was developed, increasing the effectiveness of customs units that enforce the rules for transferring goods subject to export control across the Russian Federation's customs frontier.

In 2000, in cooperation with the Institute of Physics and Power Engineering in Obninsk, the U.S. Department of Energy organized a training course on "Nuclear Export Controls" for Customs Academy students.

However, several Russian experts have expressed the belief that U.S.-Russian cooperation of late has been fairly unsystematic. Several programs that have been included in U.S. funding plans were not submitted for preliminary approval to interested ministries and agencies. The effectiveness of these programs for Russia's export control system is not always uncontested. Such programs might include the proliferation risk and analysis program, nuclear goods characterization program, and enforcement in the nuclear sphere.

Clearly when such programs are designed they should be preceded by market research, confirming the appropriateness of the proposed methods as well as the soundness of related labor and financial expenditures.

An analysis of the results obtained thus far from U.S.-Russian cooperation in the export control sphere is needed in order to determine its future goals and tasks.

The U.S. Department of Energy's International Nonproliferation Export Control Cooperation program funding for Russia and the CIS states totaled \$1.8 million in FY 2001, \$1.9 million in FY 2002, \$8.4 million in FY 2003 (including \$5 million provided by the FY 2003 Wartime Supplemental Appropriations Act), \$3.4 million in FY 2004, and \$6.9 million in FY 2005. The FY 2006 request is for \$5.9 million.

The U.S. Department of Commerce plays a key role in the interagency coordination of export control programs, as well as organizing exchanges, seminars, and other events.

Objectives identified for export control cooperation by the Office of International Programs under the Department of Commerce include:

- the application of automation technologies for export controls;
- support for the enactment of legislatively-based controls;
- licensing procedures and practices that use a senior-level interagency structure and broad-based technical support;
- support for actions to establish and strengthen effective export control systems; and
- interactive industry-government partnerships in all aspects of the national export control system.



The U.S. Department of Commerce conducts ten seminars in various parts of Russia each year on these questions, and prepares and distributes informational and educational materials.

## Second Line of Defense

"There are two key tasks. The first is the suppression of the illegal transfer of nuclear and radioactive materials across the border. This task is being pursued through the deployment of stationary and portable nuclear and radioactive materials detection systems at border crossings and the establishment of constant monitoring for the presence of such materials in all vehicles and luggage. The second task is the establishment of in-depth, selective screening of nuclear and radioactive materials legally transferred across Russia's customs frontier in order to check the lists of materials and quantity stated in the declaration."

**Nikolai Kravchenko,**  
Head of the Nuclear and Radioactive Materials  
Division of the Russian State Customs Committee,  
and current Deputy Director of the Main  
Directorate for Special Technologies and  
Automation of the Russian Federal Customs  
Service

The Second Line of Defense program is an essential element in cooperation between the U.S. Department of Energy and the Russian State Customs Committee. The program was established by the Protocol on Cooperation between the U.S. Department of Energy and the Russian State Customs Committee of June 19, 1998. In FY 1998-1999, \$3 million was allocated for the program each year, then in FY 2000 funding decreased to \$1.2 million. In FY 2002, the U.S. Department of Energy increased its request for this

program to \$4 million. In 2003, funding for the Second Line of Defense program increased significantly - to \$24 million.

The Protocol on Cooperation between the U.S. Department of Energy and the Russian State Customs Committee designated the following main activities under the Second Line of Defense program:

- joint improvement of nuclear materials detection systems and equipment;
- the equipping of border crossing points with nuclear detection monitors and incorporating them into a unified system;
- educating personnel specializing in the detection and identification of nuclear materials and related dual-use goods through training, the development of study programs, and the equipping of educational institutions with the appropriate equipment; and
- improving methods for detecting and identifying nuclear materials.

At the time when the program was established, controls over the transit of nuclear and radioactive materials across Russia's borders were problematic.

On May 7, 1997, the State Customs Committee issued Order No. 241, giving only 18 customs units the right to accept customs declarations on the export and import of fissile and radioactive materials. They were provided with equipment to determine the isotopic composition of the imported (or exported) material, preventing the possible transfer of undeclared cargo.

It is worth noting that the radiation detection packages installed with U.S. funding are using radiation monitors and equipment designed and manufactured by Russian enterprises. Russia's U.S.

## Head of the Russian State Customs Committee's Nuclear and Radioactive Materials Control Service Nikolai Kravchenko on Cooperative Programs

**Nikolai Kravchenko:** "Throughout 1996 we basically were busy accepting our [new mission], inherited from the Federal Border Service (FPS), which had previously been responsible for monitoring the transit of radioactive materials across Russia's borders."

**Question:** "What was the condition of the [equipment] you inherited?"

**Nikolai Kravchenko:** "Honestly, deplorable. The recently completed processing of the equipment we received indicated that over 50% is not in working order; a significant proportion has missing parts or is broken. One could say that in 1992-1995 radiation control on the borders was undertaken in name only, no new technical measures were established, and the old ones were not tested and repaired as they should have been. As a result, and also due to the need to equip Russia's new borders, today only 25% of the border crossing points are equipped with special equipment to detect nuclear contraband."

**Question:** "How much time will it take to equip the border with them, without western assistance?"

**Nikolai Kravchenko:** "Given the current funding level - five years. But in 1996 we did not receive one kopeck of supplementary funding for the new tasks that the customs service is undertaking with regards to nuclear and radioactive materials."

**Question:** "Did I understand correctly that if the current level of state funding for the Russian State Customs Committee's activities to prevent nuclear contraband are maintained, and if the Nunn-Lugar Program does not come to help, the border will not be solidly locked up against potential nuclear smugglers before 2001?"

**Nikolai Kravchenko:** "Yes. Although the Nunn-Lugar Program, of course, is not a panacea, at the same time support through U.S.-Russian intergovernmental cooperation in reducing the nuclear threat would not be superfluous."

**Only 25% of the Border Crossings are Equipped with Special Equipment to Detect Nuclear contraband. *Yaderny Kontrol* No. 20-21 (August-September 1996), pp. 8-10.**

partner agreed to this due to the results of various tests and evaluations of these devices carried out using equipment made in the United States and several other countries.

The Yantar radiation monitoring system that is being installed was created in Russia. It is the only system that has gone through testing at the United States' Los Alamos National Laboratory and has a certificate of compliance with U.S. standards for radiation monitors. A modification of the system to monitor trains has no equivalent elsewhere in the world. It can determine the number of the railcar in which the radioactive material is located. The system costs \$35,000-40,000 for rail or automobile monitoring systems and \$14,000 for pedestrian monitors.

Through the Second Line of Defense program Russian Customs Academy branches were supplied with necessary radiation detection and other equipment to train customs personnel in the management and implementation of customs controls over nuclear and radioactive materials.

The level of funding that is being provided directly to Russian manufacturers through the Second Line

of Defense program is higher than that of other programs to help Russia eliminate its "Cold War legacy." According to estimates by representatives of the Russian Federal Customs Service, in 2004 about 50% of program funding for the equipping of Russian border posts with radiation detection equipment was provided by the United States, and the remaining 50% came from the Russian federal budget. New equipment was installed at 17 border crossings in 2004.

## Further Reading

Dmitry Yevstafiev, Vladimir Orlov, eds. *Export Controls in Russia: Policies and Practice* (Moscow: PIR Center, April 2000).

Elina Kirichenko and Andrei Frolov, "The Transformation of the Russian Export Control System," *Yaderny Kontrol* No. 4 (Winter, 2004), pp. 125-146.

Sergei Yakimov, "The Export Control System in the Russian Federation," *Yaderny Kontrol* No. 1 (Spring, 2003), pp. 151-154.

Table 36

## Second Line of Defense Funding (in millions of dollars)

FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006*
1.2	2.4	4	24	unknown	29	24

\*Requested



## Part 3. COOPERATION PROBLEMS

Despite the progressive growth of cooperation under the Global Partnership, several problems impeding the more effective realization of this initiative remain.

### The Liability Issue

Civil liability exemption, or the question of who covers the costs of an accident should one occur, has been a serious problem in U.S.-Russian negotiations. One of the main points of dispute has been whether so-called "acts of deliberate sabotage" are subject to civil liability exemption or not. According to the U.S.-Russian "umbrella" agreement of 1992 deliberate sabotage constituted an exemption, but Russia has not wanted to include this clause in new agreements. Russia's negotiations with its European partners over the civil liability issue, by contrast, were largely resolved by the protocol to the MNEPR Agreement, signed in Stockholm on May 2003. The United States did not sign this protocol, as it received stronger liability protection under the Umbrella Agreement. This difference in donor positions can be seen in the G8 Action Plan adopted in Evian. The plan notes the need to resolve all outstanding questions in priority areas of cooperation and to review progress in the practical realization of the Global Partnership program, "keeping in mind the need for uniform treatment of partners."



**Anatoly ANTONOV, Director of the Department for Security and Disarmament, Russian Ministry of Foreign Affairs**

"It seems that it would be mistaken to assume that Russia's interest in cooperating with western countries on Global Partnership projects means the willingness to accept that assistance under any conditions. The formula 'we will give you \$20 billion and in exchange get everything that we want' will not do at the present time. Only by allowing for Russian interests and being willing to come to an agreement can a compromise be reached that will allow us to arrive together at the designated goal. It would seem that the Global Partnership should raise Russia's cooperation with western countries to a qualitatively new level. It should be equitable. No one here should play starring or secondary roles."

### Anatoly Ivanovich ANTONOV

*Director of the Department for Security and Disarmament, Russian Federation Ministry of Foreign Affairs. Worked his way up the ladder in the Ministry of Foreign Affairs system since 1978, from desk officer to ambassador-at-large, Russian representative to the G8 Global Partnership Senior Officials Group. At various times held the post of head of the export control division of the Department for Security and Disarmament, Russian Federation Ministry of Foreign Affairs, Deputy Director of the Department for Security and Disarmament, Russian Federation Ministry of Foreign Affairs, and Deputy Permanent Representative to the United Nations Organizations in Geneva. Ambassador Antonov led the Russian delegation to various forums on disarmament and nonproliferation. He is a member of the PIR Center Advisory Board and has a doctorate in economics.*

Negotiations over the elimination of excess weapons plutonium, which is one of the four Global Partnership priorities, have been "hung up" for several years due to the continued failure of United States-Russian negotiations to solve the liability issue. Further, negotiations over the liability portion of the agreement to govern the Multilateral Plutonium Disposition Group appear to be awaiting the conclusion of a U.S.-Russian liability protocol; thus, no international plutonium disposition projects have been able to begin either. In the middle of 2005, a civil liability protocol was negotiated by Russia and the United States. The protocol is currently making its way through an interagency consultative process in Russia (so called interagency accord process), which may take several months. However, some experts believe that the liability dispute between the United States and Russia was a cover for other controversies, including the issue of technology transfer and MOX fuel reactor operating costs. It should be noted that the resolution of the civil liability dispute between the Russian Federation and the United States in the area of plutonium disposition does not automatically influence the debate over the CTR Umbrella Agreement extension. This basic agreement expires on June 17, 2006. And as of December 2005, nothing is known on prospects of its extension.

### Nuclear Damage

The concept of nuclear damage is one of the central, determining concepts that underlies both the international and national civil liability regime for nuclear damages. In Russian law, instead of the term "nuclear damage," the term "damages and harm inflicted by radiation exposure to legal and physical persons, and to human health." However, since this phrase is fairly cumbersome, here we will use the term "nuclear damage." Based on the Paris Convention on Third Party Liability in the Field of Nuclear Energy of July 29, 1960 and the 1963 Vienna Convention on Civil Liability for Nuclear Damage, we see that this concept includes the death or any bodily harm, any loss of property or harm to property. Russian legislation, in addition, covers as ecological damages and harm caused to the environment (see the federal law *On Environmental Protection*, and Article 59 of the federal law *On the Use of Atomic Energy*). Thus, it follows that nuclear damage includes harm caused to human life, health, and property as well as to the environment.

### Control over Funding Expenditures

Control over the expenditure of funds allocated for Global Partnership projects remains one of the most urgent cooperation problems. There is no clear picture in many countries of how funds allocated for assistance programs are disbursed, and how much of the funding reaches Russia. Russian and foreign estimates of how much money actually reaches Russia vary widely. Thus it is a serious problem that the accounting and control mechanisms over the disbursement of these funds in both donor countries and Russia are insufficient. Cooperation between regulatory agencies – the Russian Federation Accounts Chamber and the audit institutions of some partner countries – is not currently being conducted at the necessary level.

The funding problem is therefore a two part problem: are pledges resulting in actual funds allocated to Russia, and are the funds allocated being effectively used for their designated purposes. It appears that the majority of the \$1 billion allocated each year for programs in Russia and the CIS by the United States, for instance, never gets to these countries. Unofficial estimates by U.S. experts suggest that from 60% to 70% of funds allocated remains in the United States. According to Russian

experts, the percentage of funding used in Russia is no more than 25–30% in the nuclear sphere and 10–15% in the sphere of chemical disarmament.

In fact, Russia, the United States, and other countries have monitoring mechanisms that make it possible to evaluate the effectiveness of expenditures under the Global Partnership. In 2001, for example, the Norwegian General Accounting Office issued a report on Russian-Norwegian cooperation. According to the report, the majority of 111 nuclear projects, worth about \$57 million, had not produced satisfactory results. For example, construction of a liquid radioactive waste storage and processing facility under the multilateral Murmansk Initiative, which started in 1994, has been plagued by many problems, including equipment delivery delays, frequently changing Russian regulations, unrealistic deadlines, and nonpayment of Russian workers (as of 2005 the installation is still not up and running). The report also noted that some US equipment had not been tested before being sent to Russia, causing problems on site.

The Russian Federation Accounts Chamber too has carried out audits to determine the effectiveness of funding allocated for Global Partnership project implementation. For example, from February 16 through August 13, 2003, the Accounts Chamber examined whether federal budget funds allocated for the dismantlement of nuclear submarines in 2002 were used as intended and in accordance with the law. The results of the audit indicate that 118.7 million rubles (about \$3.9 million) in budgetary funds were not used as they were intended and 117.9 million rubles were not used effectively. The report was presented at a session of the Accounts Chamber Board on October 17, 2003. It contains several recommendations related to the audit findings, including the proposal that an official strategy be created for the integrated dismantlement of nuclear-powered submarines and surface ships. This strategy should define principles and approaches, in order to help identify priority tasks and ensure the economical expenditure of budgetary funds.

A similar examination of funding expenditures in the area of chemical weapons elimination was also undertaken. On November 14, 2003, the Accounts Chamber Board reviewed the results of the audit into whether budget funds allocated in 2002 for the dismantlement and elimination of chemical weapons and fulfillment of relevant international



agreements were used as intended and in accordance with the law. The board noted that the federal targeted program entitled the Destruction of Chemical Weapons Stocks in the Russian Federation was not receiving enough funds to enable Russia to fulfill its international obligations under the Convention on the Prohibition of Chemical Weapons in a timely manner. Overall, the activities provided for in the federal targeted program only received 81% of the designated funds. Meanwhile, the Russian Munitions Agency did not take any steps to engage extrabudgetary funding sources. In addition, the Russian Munitions Agency did not adequately monitor that budgetary funds were used as intended.

According to the federal law *On the Russian Federation Accounts Chamber*, the Accounts Chamber may cooperate with foreign government agencies that monitor public finances. Cooperation with several Global Partnership countries is being carried out in both a multilateral (through the International Organization of Supreme Audit Institutions and the European Organization of Supreme Audit Institutions) and bilateral format. Through bilateral agreements and protocols on cooperation with the supreme audit institutions of the United Kingdom, Germany, Poland, France, and the United States informational materials and information on methods are being exchanged, reciprocal seminars held, and training on the most urgent aspects of auditing work conducted. However, there has yet to be a concentrated effort to undertake a joint audit of Global Partnership cooperation. More cooperation between the audit institutions of nations participating in the Global Partnership is therefore needed.

### The Access Issue

One of the most difficult questions is that of access to all facilities where equipment provided by the United States has been installed or U.S. assistance is being otherwise provided. Access disputes continue to create considerable problems in the implementation of cooperative programs to eliminate Russia's "Cold War legacy," and have not been completely solved to this day, though much progress has been made.

U.S. Government agencies, particularly the Department of Energy, and many prominent members of Congress believe that if U.S. inspec-

tors are not given access to facilities under Russia's Federal Atomic Energy Agency, it is impossible to ensure that U.S. funding and equipment is really being used for its intended purpose. For this reason, projects that the United States would like to initiate involving the upgrading of physical security systems at operational nuclear weapons depots as well as biological laboratories cannot be launched. Former U.S. Senator Sam Nunn has suggested that perhaps the solution in the sphere of biosecurity is the provision of reciprocal access to U.S. facilities.

**Donald HUGHES, Vice President of Bechtel National, Inc., United States (1999-2005)**



"The handicap, which may never be overcome, is the lack of trust that remains from the Cold War era, and undermines many joint projects. Two traditional 'headaches' are questions related to transparency and taxation, although in recent years a lot has been done in these areas."

Many Russian officials believe that U.S. Government agencies are trying to get the most information about nuclear weapons facilities and designers that they can and, if possible, about the weapons themselves as well. Verifying the proper use of grant assistance could just be a pretext used to achieve these other aims. In addition, Russia is worried by the large number of U.S. inspection groups and the volatility of their personnel. This increases the danger that extremely sensitive information will be spread. This is why Russia insists on strict guarantees that classified information obtained during the course of such inspections will not go beyond a very narrow circle of people who are directly participating in the implementation of the related programs.

All in all, the problem of access to Russian nuclear weapons facilities is one of the most painful and intractable problems affecting U.S.-Russian cooperation in the areas under consideration here. It is unlikely that it can be completely solved in the foreseeable future. However, it is critical to narrow the area of disagreement as much as possible; that is, reduce the list of facilities that will remain closed to foreign inspections no matter what. But at the same time Russia must receive reliable guarantees that confidential information will not be spread. One should also note that even given current conditions there are several European donor countries that have

indicated their satisfaction at the solutions to the question of access to facilities under the program.



**Massimiliano NOBILE, Director of International Projects, Sogin (Italy)**

"We visited all of the places that interest us. We were given access to Severodvinsk, Andreyeva Bay, Sayda Bay, and Gremikha. We had many meetings with various Russian organizations that act on behalf of Rosatom, like Nerpa Shipyard and SevRAO. And I would like to use this opportunity to personally thank Mr. Antipov and Mr. Akhunov for helping us to promptly receive all of the information we needed."

### The Taxation Issue

The conflict between Russia and donor states that arose in the late 1990s regarding the taxation of foreign legal and physical persons involved in assisting Russia to eliminate its "Cold War inheritance" was caused by the positions of the Russian Ministries of Taxation and Finance. They argued that the U.S.-Russian Agreement of 1992 is no longer in effect, since the 1999 protocol on its extension was not submitted to the Federal Assembly for ratification within six months after its signature, as is required by federal law No. 101 of July 15, 1995, *On the International Agreements of the Russian Federation* (Article 23, Section 2). Therefore, in the opinion of the two ministries mentioned above, grant assistance provided by the United States could be taxed, which is not acceptable to the United States.

The Russian Ministry of Foreign Affairs, in turn, argues that under law No. 101 there is an article on the temporary application of international agreements, which should govern the current situation. In addition, according to Article 23, Section 3 of the law, the temporary application of the treaty is ended by notifying the other party of the Russian Federation's intent to no longer be a party to the agreement. Since Russia has not sent such a notification to its U.S. partner, the delay in ratifying the international agreement does not countermand the article on its temporary application.

The 1992 protocol to the agreement was not sent for ratification for fairly apolitical reasons. The Russian Ministry of Foreign Affairs sent the document to the Russian Government so that it could

undergo ratification, but the protocol was returned to the ministry for modification after Presidential Decree No. 867 of May 17, 2000, *On the Structure of Federal Executive Bodies*, was issued. This decree stipulated the reassignment of tasks between various ministries and agencies, including Russian agencies that had previously been implementing agencies under the 1992 agreement. Thus, for instance, the Ministry of the Economy, which was the implementing agency for the elimination of strategic weapons, was abolished. Work in this area was reassigned to both the Ministry of Atomic Energy and the Russian Aerospace Agency, while the Russian Munitions Agency was given the task of implementing chemical weapons destruction, formerly overseen by the Russian Ministry of Defense. This updating of executive functions meant that the 1999 protocol had to be modified to reflect the changes; obtaining U.S. agreement to the changes has continued from 1999 to the present day. Certainly, the frequent changes in the structure of federal executive bodies in Russia has had negative consequences for the implementation of cooperative programs, including a decrease in appropriations. Given the underfinancing of disarmament programs on the part of Russia itself, this has clearly hampered Russia's fulfillment of international agreements on the reduction of WMD.

In 2003, at a meeting led by Russian Federation Prime Minister Mikhail Kasyanov to deal with this problem, the decision was made to exempt foreign physical and legal persons participating in projects under the Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) agreement from the imposition of the value-added tax and other levies on goods and equipment acquired in Russia, as well as work performed and services provided. Russia expressed its readiness to include a provision in the draft document on its provisional application from the date of signature, a clause that was included in the final MNEPR Agreement.

### The Future Expansion of the Global Partnership

There are two possible tracks for Global Partnership expansion – getting more states to become donors and enlarging the number of recipients. Both tracks are very important, although it is clear that most states that want to join the Global Partnership as donors have already done so.



## The Access Issue in Practice

A U.S.-Norwegian delegation that arrived in Murmansk in August 2003 in order to discuss the dismantlement of Russian multipurpose submarines at Nerpa Shipyard refused to visit the facility after Russia denied access to six members of the delegation. Norwegian Ambassador Torbjørn Norendal was quoted as saying, "Either we all go or no one goes." Murmansk region Vice Governor Vladimir Motokhov expressed his regret that the visit to the enterprise had gone wrong. He stated that this was not due to any action on the part of the local government, but was a decision of the Ministry of Defense, which Motokhov erroneously claimed has jurisdiction over Nerpa.

The visit was planned as part of activities to monitor the fulfillment of a Russian-Norwegian contract. Two U.S. congressmen and their assistants were part of

the delegation; the U.S. officials were contemplating possible U.S. assistance for multipurpose submarine dismantlement. Their assistants, however, were denied access to the site. Several Russian sources claim that some people in the delegation represented the intelligence community rather than the Global Partnership one. The U.S. congressmen later stated that they believed the order to deny access had been issued by the FSB, not the Ministry of Defense. While Motokhov averred that the Ministry of Defense had ordered the ban, he noted that with an extra day or two access could likely have been granted. One and a half months later, after a new request had been filled out, the Norwegian visit took place. The U.S. congressmen, however, did not return to Nerpa; nor did they push to expand U.S. assistance in this sphere.

Clearly, the Global Partnership is not only aimed at solving disarmament and nonproliferation problems in Russia. One should remember that in Kananaskis, the G8 leaders agreed to enter negotiations at a later date with other potential recipient states, including former Soviet republics, on their joining the Global Partnership. In 2004, Ukraine was the first such country to officially join the Global Partnership.

In Evian the decision was made to continue to concentrate on projects in Russia. Nonetheless, France, then chair of the G8, was given a mandate to "enter into preliminary discussions with new or current recipient countries including those of the former Soviet Union that are prepared to adopt the Kananaskis documents, as the Ukraine has already done." However, there has been little evident progress in this area. The G8 statement on nonproliferation stated, "We welcome Ukraine's participation, and continue to discuss with a number of countries of the Former Soviet Union their interest in joining the Partnership. We reaffirm our openness in principle to a further expansion of the Partnership to donor and recipient partners which support the Kananaskis documents."

Is the entry of other CIS countries into the Global Partnership in Russia's interest? It seems that the answer here should be positive, if the political decision to spend money for cooperative threat reduction programs in the CIS were to be taken in Russia.

The Global Partnership framework provides very good protections for foreign assistance. It is clear that having no threats to national security around its borders is in Russia's interest. Russia is interested in having no inflow of terrorists through the territory of CIS countries – indeed, no inflow of threats of any kind.

In the near future much will have to be done to explain the core goals and tasks of this initiative to the public and legislators in Global Partnership donor states. This is needed both so that they understand the tasks that the governments of the world's leading states are trying to solve, and in order to arrange for a normal process of funding distribution and the passage of related legislation and agreements through the parliaments of Global Partnership donor states.

## Further Reading

Anatoly Anin, "The Global Partnership at a Crossroads," *Yaderny Kontrol*, No. 4 (Winter), 2003, pp. 15–24.

Robert Einhorn and Michèle Flournoy, *Protecting against the Spread of Nuclear, Biological, and Chemical Weapons: An Action Agenda for the Global Partnership*, (Washington: Center for Strategic and International Studies, 2003), vol. 2, "The Challenges."

## Part 4. GLOBAL PARTNERSHIP MEMBER COUNTRIES



## Australia

An official announcement that Australia had joined the Global Partnership was made at the G8 Summit in Sea Island (United States) on June 8–10, 2004. The Government of Australia committed 10 million Australian dollars (over US\$ 7 million) for Global Partnership projects related to the dismantlement of Pacific Fleet submarines.



Sergei ANTIPOV, Deputy Director of the Russian Federal Atomic Energy Agency

"We could find ourselves in the situation where all of the problems associated with nuclear submarines and spent nuclear fuel in the Russian Northwest basically are solved, but the problems in the Russian Far East remain for many long years. From the point of view of possible threats, primarily terrorist threats, this would be not simply a regional problem, but a problem for the entire global community."

In order to speed up the putting of these funds to use, Australia will channel them through Japan's intergovernmental agreement with Russia, the Agreement between the Government of Japan and the Government of the Russian Federation Concerning Cooperation for the Elimination of Nuclear Weapons Reduced in the Russian Federation, in force since its signature in 1993. Japan is currently funding the dismantlement of submarines in the Russian Far East through this agreement.

On July 24, 2004, a decision of the Board of the Russian-Japanese Cooperation Committee – the joint implementing agency for the 1993 Agreement – was signed in Moscow, by which a special escrow account of the secretariat of the Committee would be opened for Australia to transfer the allocated funds. The November 21, 2005 signing of Russian-Japanese implementation agreement for the dismantlement of five NPS raises hope that an arrangement for the use of Australian funds may be signed in 2006.

## Belgium



An official announcement that Belgium had joined the Global Partnership was made at the G8 Summit in Sea Island (United States) on June 8–10, 2004. Belgium is a party to the Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) Agreement, and participates in the work of the Northern Dimension Environmental Partnership, to which it has contributed €0.5 million.

## Canada



In Kananaskis, Canada pledged 1 billion Canadian dollars (about US\$ 800 million) for the Global Partnership.

## History of Cooperation

Prior to the agreement on the Global Partnership Program, Canada had a long history of cooperating with Russia in the nuclear sphere. The first framework agreement in this area was the Intergovernmental Agreement for Cooperation in the Peaceful Use of Nuclear Energy, signed in Moscow and entering into force on November 20, 1989. The agreement provided for the exchange of nuclear materials and technologies, as well as the possibility of joint research. Canada and Russia later confirmed the validity of the 1989 Agreement when they signed the joint Russian-Canadian Statement on Cooperation in the Field of Peaceful Use of Nuclear Energy in 2002.

## Jean CHRÉTIEN, Prime Minister of Canada, 1993–2003



"Global Partnership projects will improve international security by destroying chemical weapons, dismantling nuclear submarines, disposing of fissile materials and redirecting weapons scientists into peaceful research."

Canada also provided assistance to Russia within the framework of this agreement. In 1992, Canada initiated a special government program called the Canadian Nuclear Safety Initiative, which was



implemented on the Canadian side by Atomic Energy of Canada and the Atomic Energy Control Board of Canada (now the Canadian Nuclear Safety Commission). A total of C\$23 million was allocated to the program, which funded assistance in Russia as well as other former Soviet states, Central, and Eastern Europe.

Besides the 1989 agreement, the two nations concluded several other relevant agreements, including a protocol between the Russian Ministry of Atomic Energy and the Canadian Department of Foreign Affairs on cooperation in improving nuclear safety at nuclear power plants with channel-type RBMK reactors, infamous since the Chernobyl disaster. The parties subsequently formulated and, in December 1995, signed a joint Action Program on Nuclear Safety and Technology.

In the mid-1990s, Canada also cooperated with Russia in the area of plutonium disposition. On November 2, 1994, the Russian Ministry of Atomic Energy and AECL signed a Declaration of Intentions regarding the possible use of excess Russians weapons-grade plutonium for the production of MOX fuel to be burned in Canadian NPPs with CANDU reactors. The following year, in December 1995, the decision was made to conduct joint research on Russian RBMK and Canadian CANDU reactors. Minatom, Canada's Department of Foreign Affairs and Trade, and the U.S. Department of Energy participated in the so-called Paralex program. The trial loading of this type of MOX fuel in a reactor took place in early 2001. Were the technology to be realized on an industrial scale, up to 1.5 tons of weapons-grade plutonium could be eliminated per year in each reactor. As of January 1, 2005, the results of the experiment were still under examination.

At the G8 Summit in Sea Island (United States) on June 9, 2004, Canada and Russia signed an Agreement on Cooperation in the Destruction of Chemical Weapons, the Dismantlement of Decommissioned Nuclear Submarines, and the Physical Protection, Control and Accountancy of Nuclear and Radioactive Material. This agreement is the legal basis for Canada-Russia Global Partnership bilateral cooperation.

#### Nuclear and Radiological Security

Under the Global Partnership, Canada is working with Russia on a variety of nuclear and radiological

security projects to ensure that Russia's vast stockpiles of material for nuclear weapons are adequately secured.

In March 2005, Canada contributed C\$9 million to a US-led project to shut down the weapons-grade plutonium producing reactor in Zheleznogorsk, Russia, through the provision of an alternate power source for the surrounding region. This complements the C\$65 million commitment Canada made in 2003 to Russia's plutonium disposition program, under which Russia will convert 34 metric tons of weapons-grade plutonium into a non-weapons-usable form. Canada is also working with the Rosatom on projects to improve physical protection measures at Russian nuclear facilities.

In August 2005, Canada contributed C\$0.5 million to Norway's efforts to secure highly radioactive sources (radioisotope thermoelectric generators or RTGs) that power lighthouses in Northern Russia. Canada's contribution is being used to remove and secure these vulnerable sources from beacons in the Murmansk and Arkhangelsk regions, and to replace them with solar cell panels. Canada is also working bilaterally with Rosatom on additional projects related to the security of other highly radioactive sources.

#### Nuclear Submarine Dismantlement

Canada plans to provide up to C\$300 million for work associated with nuclear submarine dismantlement over a period of 10 years. Included in this figure is C\$32 million contributed to the EBRD's Northern Dimension Environmental Project (NDEP). The purpose of these funds is to ensure that spent nuclear reactor fuel can be safely and securely managed.

The first Implementing Arrangement (C\$24.4 million) to defuel and dismantle three Victor-class nuclear-powered submarines was signed in July 2004 with Zvezdochka Shipyard. Work under the second Implementing Arrangement (C\$32 million), signed in March 2005, including the towing of eight nuclear-powered submarines, the defueling of four and dismantling of three of these submarines is already underway. Canada will have funded the dismantlement of a total of 12 submarines in 2008. To date, all of Canada's assistance has been in the Russian Northwest. Teledyne Brown Engineering is providing support services for Canadian project monitoring.

#### Construction of Chemical Weapons Destruction Facilities

Prior to the launch of the Global Partnership, Canada contributed over C\$5 million for infrastructure projects at the Chemical Weapons Destruction Facility in Shchuchye. Subsequently, under the Partnership, Canada has committed C\$98 million for projects at Shchuchye, including \$33 million (in 2003) for construction of an 18 kilometer railway and \$10 million (in 2004) for several high-priority infrastructure projects (e.g., construction of a local public address system, inter-site communications, etc.). In July 2005, Canada committed to contribute an additional C\$55 million for the provision of equipment to process nerve agent munitions within the second main destruction building at Shchuchye. Canada is contributing the funds for its Global Partnership projects at Shchuchye through the United Kingdom's bilateral agreement with Russia. Under the terms of Canada-UK Memorandum of Understanding, signed on November 19, 2003 and January 18, 2005, the United Kingdom is responsible for implementing Canadian-funded projects at Shchuchye, in consultation with Canada. Project planning is now underway.

#### Christopher WESTDAL, Canadian Ambassador to Russia



"Though we still have a long way to go before ridding the world of chemical weapons, we must not underestimate how far we have already come. Make no mistake — this is a good news story — an extraordinarily good news story. Together we can ensure a safe arrival at our destination."

In February 2005, Canada secured a US \$1 million contribution for the railway project from the non-governmental organization Nuclear Threat Initiative (NTI); NTI's funds are being applied to the construction of a bridge across the Miass River.

Canada has also committed to provide US \$100,000 per year for four years to fund the establishment and operation of a Green Cross Public Outreach Office in Izhevsk (Udmurt Republic). This project is designed to increase awareness about Russian plans and programmes to destroy CW stockpiled at the nearby Kizner and Kambarka CW storage facilities. The office opened in June 2005.

Table 37

#### Canada's Global Partnership Expenditures (in thousands of Canadian dollars)

Area	2003-04	2004-05
Chemical Weapons Destruction	4,040.6	455.6
Nuclear Submarine Dismantlement	32,025.1	10,649.0
Redirection of Former Weapons Scientists	18,479.3	3,544.0
Nuclear & Radiological Security	3,047.7	10,203.8
Biosafety & Biosecurity (including administrative costs)	12.3	98.0
Operational Costs	2,045.1	2,349.9
Total Indirect Spending	1,465.0	2,382.7
<b>Grand Total Global Partnership Activities Funded</b>	<b>61,115.1</b>	<b>29,683.0</b>

#### International Science and Technology Center (ISTC)

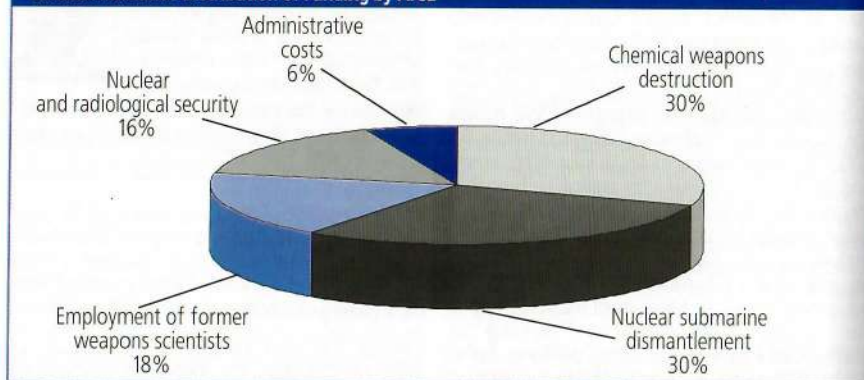
In March 2004, Canada officially joined the ISTC. With annual funding of up to C\$18 million, Canada

is third largest contributor to ISTC behind the United States and the European Union. To date, Canada has funded 61 science projects worth C\$15.5 million, redirecting over 1,400 weapons scientists. Through the ISTC, Canada also supports vari-



Canada: Indicative Distribution of Funding by Area

Figure 21



ous ISTC competency-building and commercialization support programs aimed at giving former weapons scientists the skills necessary for them to peacefully exploit their expertise.

In accordance with the commitment made by leaders at the Kananaskis Summit in 2002, Canada is pursuing a number of initiatives in Russia and the former Soviet Union (FSU) to prevent terrorists and states that harbour them from acquiring or developing biological weapons and related materials, equipment and technology. Canada has already funded 16 Biotechnology and Life Sciences projects through the ISTC aimed at the redirection of former bio-weapon scientists. Canada is also prepared to provide assistance under the GPP to improve biological safety (biosafety) and biological security (biosecurity) in Russia and the FSU.

The distribution of Canadian pledges by Global Partnership project area can be found on Figure 21.

#### Further Reading

Canada's Global Partnership Report "Securing the Future" on [www.globalpartnership.gc.ca](http://www.globalpartnership.gc.ca)

Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003), vol. 3, pp. 1–12.

#### Czech Republic



The Czech Republic officially joined the Global Partnership at the G8 Summit in Sea Island (United States) in 2004. Even before this announcement, Prague had declared a pledge of £45,000 (about \$75,000) for the construction of an electricity substation for the Shchuchye chemical weapons destruction facility. This project is funded via the United Kingdom's chemical weapons destruction cooperation program. In October 2004, the Czech Republic announced an additional pledge of £40,000. In fall 2005, the Czech Republic agreed to contribute a further £45,000 via the United Kingdom to help bring into operation the Shchuchye CWDF. This brings the total Czech contribution at Shchuchye to some £135,000.

#### Denmark



Denmark officially joined the Global Partnership at the G8 Summit in Sea Island (United States) on June 8–10, 2004. As of January 1, 2005, Denmark's contributions largely have been limited to the €10 million it has provided to the EBRD's Northern Dimension Environmental Project (NDEP), and €100,000 provided to the Green Cross chemical weapons outreach program in 2003. Denmark's total Global Partnership pledge is €17.2 million. Denmark has signed Multilateral Nuclear Environmental Program in the Russian Federation Agreement.



#### European Union

In evaluating the European Union's contribution to WMD nonproliferation programs, one must keep in mind its nature as a supranational organization with a unique decision-making system, institutional mechanisms, and authority in the sphere of international security. When the European Community was initially created, external politics and international security were not within its realm of competence, and remained exclusively the prerogative of EU member countries. However, nuclear nonproliferation issues were indirectly included in the EU realm of action when the Treaty of Rome created Euratom.

Along with the creation of the European Union in 1992, two areas of EU action related to international nonproliferation policy arose. The first was in supranational institutions such as the European Communities (the so-called "first pillar" of the European Union). The second was the Common Foreign and Security Policy (the EU's "second pillar"), a mechanism for the coordination of the policies of individual EU states.



**Natalia KALININA, Deputy Inspector-General, Accounts Chamber of the Russian Federation (Assistant to the Prime Minister of the Russian Federation, 2003–2004)**

"The European Union declared that it would provide €1 billion for the realization of Global Partnership programs. Since the EU does not have its own funding, it is formed from the contributions of member countries. If you count the funds that partner states allot to the European Union, which it in turn allocates for assistance programs, you have a problem of double counting. From this you can deduce that one should not count too much on the amount of financial assistance announced by the EU."

#### The European Union's TACIS Program

At present the Technical Assistance to the CIS (TACIS) program is the main form of cooperation between the European Union and Russia in the nuclear sphere. The program is mainly oriented towards the improvement of safety at nuclear power plants and other civil nuclear installations in Russia, including nuclear fuel cycle enterprises, and the handling of radioactive waste. Priority areas of cooperation include:

- nuclear power plant safety (assistance at sites, operational safety, and design safety);
- safety of the nuclear fuel cycle and radioactive waste handling;
- nuclear materials control and accounting; and
- regulatory assistance and technical support.

Since 1991, the program of technical assistance for nuclear safety has included 374 projects at a cost of nearly €318 million. About 225 projects costing about €172 million have been completed, mostly in 1991–1997. Some 54 projects are currently being implemented, while another 95 are at various stages of development. Rosatom carries out its activities in accord with the TACIS strategic plan for 2000–2006. After significant reductions by the EC in 1998 and 1999, TACIS funding since 2000 has begun to gradually increase to previous levels. Thus allocations to TACIS for 2002–2003 were €78 million.

In all, the TACIS program helps Russian nuclear energy gain access to leading western technologies, allowing Russian material, financial and personnel resources to be saved and used more rationally. TACIS funding helped make it possible to undertake measures to improve safety at many Russian power plants and obtain equipment needed to modernize nuclear facility safety systems, along with technical documentation, etc. This has helped increase the general safety culture at Russian NPPs.

**TACIS Funding of Nuclear Safety Projects (in millions of Euros)**

**Table 38**

1997	1998	1999	2000	2001	June 2002–June 2005
34	17	12	33	19	69.4*

\* In addition, €20 million was contributed to the EBRD's Northern Dimension Environmental Project (NDEP) in 2003.



### Future Prospects for Cooperation

In the near future, the European Union plans to begin the process of renewing the Joint Action establishing the Program for Nonproliferation and Disarmament in the Russian Federation. During this process the EU plans to increase the number of cooperative projects as well as their geographic area.

EU funding of nonproliferation projects in Russia in 2004–2006 (not counting NPP safety) will be made up of funds provided under the Joint Action; TACIS contributions given to the NDEP for projects in Northwest Russia; MPC&A and export control projects; as well as ISTC funding in addition to member nations funding of bilateral projects. In the next three years some €150 million will be spent. The European Union is also actively cooperating with Russia in the area of chemical weapons. Previously, the European Union participated in the construction of facilities and infrastructure in Gornyy, Shchuchye, and Kambarka (€10 million to date) as well as projects to create environmental monitoring in Saratov and Novocheboksarsk and a decontamination project in Dzerzhinsk (€6 million).

Since EU has a 5 year budget cycle an increase in funding before 2007 is unlikely. After the EU Strategy against Proliferation of WMD was adopted in 2003, nonproliferation issues became a top EU policy concern. The creation of a separate budget line for nonproliferation and an increase Global Partnership program funding during the next EU budget cycle (2007–2013) is on the EU agenda, to enable the Union to meet its commitment to provide €1 billion for this program.

### Further Reading

Ian Anthony, "The Role of the EU in International Non-Proliferation and Disarmament Assistance," Geneva Centre for Security Policy, Occasional Paper No. 44 (October 2004).

Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003), vol. 3, pp. 13–48.

Kathrin Höhl, Harald Müller, and Annette Schaper, "EU Cooperative Threat Reduction Activities in Russia," *Chailot Paper* 61 (Paris: European Union Institute for Security Studies, June 2003).

### Finland



Finnish-Russian cooperation in the nuclear sphere began in 1992. Finland provides assistance in the following areas: nuclear materials control and accounting, risk reduction related to the storage and transport of radioactive waste, interdiction of illegal trafficking of nuclear materials, radiation monitoring, emergency preparedness at nuclear facilities, and the training of NPP personnel.

At the present time, Finnish financial assistance is also being directed at elimination of Russian chemical weapons; cooperation in this area began in 1996.

According to the Russian Ministry of Foreign Affairs, Finland had provided approximately \$1.5 million for such projects as of the end of 2003. According to Finland's report to the G8 in June 2005, Finland expended €7.1 million in the nuclear sphere (including \$0.5 million for assistance at the Chernobyl NPP) and €739,000 in the area of chemical weapons elimination between June 2002 and June 2005 (the period of the Global Partnership) – or nearly \$9 million, including a €1.365 million contribution to the NDEP.

From the Russian point of view, the main problem affecting Finnish cooperation is the lack of funding. Finland is not able to provide broad project funding to Russia at the present time. However, Helsinki allocates funds for concrete projects such as radiation monitoring.

The basis for cooperation in the nuclear sphere was established by the Agreement between the Government of the Republic of Finland and the Government of the USSR Concerning Cooperation in the Peaceful Use of Atomic Energy of May 14, 1969. The extension of which is currently under negotiation. Although cooperation in the peaceful use of atomic energy is not directly tied to Global Partnership questions, it is precisely this subject that served as a basis for dialogue between the two countries and continues to serve as a guide for future cooperation.

In the sphere of chemical weapons elimination, cooperation was first based on the October 25, 2000 Agreement between the Government of the Republic of Finland and the Government of the Russian Federation on Supply by Finland of a

Chemical Warfare Agent Detection Network to the Chemical Weapons Storage Depot. Under the agreement, Finland committed to supplying and installing on a gratis basis a chemical agent leak detection system at the chemical weapons storage depot in Kambarka, Udmurt Republic. This project was completed in 2001, at a cost of €404,000. An October 25, 2002

agreement between the Russian Munitions Agency and the Finnish Ministry for Foreign Affairs stipulated the provision of a chemical agent detection network for the safe storage of lewisite at the chemical weapons destruction facility in Gornyy, Saratov region. This project was completed in 2003, at a cost of €589,000.

Table 39  
Finland: Distribution of Funding by Area

Project	Funding	Implementation Period	Responsible Party (contractor)
Cooperation with Russian nuclear regulatory & customs authorities in safeguards and verification; and on nuclear waste regulations	€690,000	2000–2002	Federal Service for Environmental, Technological, and Nuclear Oversight, Customs Service, etc.
Technical safety and other projects at NPPs	€3.35 million	2002–2005	Kola and Leningrad NPPs – STUK
Provision of equipment to the Leningrad NPP	\$258,000	2000–2002	Leningrad NPP – Radiation and Nuclear Safety Authority (STUK)
Emergency preparedness, Northwest Russia	€300,000	2002–2005	Several, including Technical Emergency Response Center – STUK
Regulatory and other cooperation with nuclear safety authorities in Russia and Ukraine	€930,000	2002–2005	Several, including Technical Emergency Response Center – STUK
Shutdown of plutonium production reactor and construction of fossil fuel plant in Zheleznogorsk	€500,000 (Finnish contribution)	2006	U.S. Department of Energy – Rosatom
NDEP contribution	€2 million	2002–2006	Technical Emergency Response Center – STUK
Provision of chemical agent detection network to Gornyy CWDF	€589,000	2002–2003	Russian Munitions Agency – Finnish Ministry for Foreign Affairs
Provision of chemical agent detection network to Kambarka CWDF	€404,000	2000–2001	Russian Ministry of Defense – Finnish Ministry for Foreign Affairs
Support to Green Cross activities	€150,000	2005	Green Cross – Finnish Ministry for Foreign Affairs



In the near future Finland plans to broaden the scope of its cooperation under the Global Partnership. Finland is already assisting a non-governmental organization, Green Cross, in chemical weapons-related information and awareness-raising activities in the Russian Federation. Discussions between Finland and Russia on further technical support for chemical weapons destruction are ongoing. In the nuclear sphere, Finland continues to finance nuclear safety and safeguards, and emphasizes cooperation through the Northern Dimension Environmental Project, to which it has committed €2 million for 2002–2006. Finland, together with other donors, is also committed to supporting the shutdown of one of Russia's remaining weapons-grade plutonium production reactors in Zheleznogorsk. In November 2005, Finland decided to contribute €0.5 million for this project.

In total, Finland is committed to allocating up to €15 million for Global Partnership projects. Beyond the Global Partnership, Finland cooperates with Russia on nuclear safety issues through bilateral and regional channels. Finnish funding for ongoing nuclear safety, safeguards, and security projects in Russia amounts to over €15 million.

### Regulatory Framework

*Agreement on a Gratuitous Supply by Finland of a Fixed Chemical Warfare Agent Detection Network to the Chemical Weapons Destruction Facility in Gornyy, Saratov region, Russian Federation.*

This agreement between the Russian Munitions Agency and the Finnish Ministry for Foreign Affairs was signed for a two-year period on October 25, 2002. The agreement provides for the delivery of a chemical agent detection network for the safe storage of lewisite at the chemical weapons destruction facility in Gornyy. The agreement also stipulates the beginning of equipment delivery within three months from the moment the agreement is ratified. Equipment delivery was made the responsibility of Finland's Hansel Oy company, while Russia was obligated to provide comprehensive informational support during the transport of the equipment. The agreement also provided for the tax exempt status of Finland's contribution to the elimination of Russian chemical weapons. The parties also agreed on the timely sharing of information in case an accident should arise.

*Agreement on a Supply by Finland of a M90 Fixed Chemical Warfare Agent Detection Network to the Chemical Weapons Storage Site in Kambarka, Republic of Udmurtiya, in the Russian Federation.*

This agreement was signed for a two-year period on October 25, 2000 by the Finnish Ministry for Foreign Affairs and the Russian Ministry of Defense. The agreement provided for the provision of assistance in the form of the delivery and installation of a chemical agent detection system at the chemical weapons destruction facility in Kambarka, Udmurtiya. In addition to the delivery and installation of equipment, the agreement provides for Finnish specialists to provide training and conduct seminars for Russian personnel. This agreement too stipulates that Finland's assistance will be tax exempt.

### Results

Finnish chemical agent detection equipment has helped to improve the monitoring system in the chemical weapons storage area at the future Kambarka chemical weapons destruction facility and increase the level of environmental security for the surrounding population. In 2002, a similar agreement on the delivery of a chemical agent detection network for the safe storage of lewisite at the Gornyy CWDF was concluded.

At the Gornyy facility's chemical agent storage depot delivery and installation of the detection network was completed in 2003. The system includes fixed chemical agent detectors set up in the agent storage depot, and a system of portable detectors. These devices react to the smallest emission of chemical agent into the air and immediately give a danger signal.

### Further Reading

Anna Abaeva, "Russia and Scandinavia – an Extension of the Global Partnership," *Yaderny Kontrol* No. 1 (Spring), 2004, pp. 107–130.

Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003), vol. 3, pp. 49–56.



### France

February 7, 1992, when the French Government recognized the Russian Federation to be the legal successor of the Soviet Union, could be considered the beginning of France's cooperation with Russia in the area of "cooperative threat reduction." On November 12 of that year, the Agreement on Cooperation on the Safe Disposal of Nuclear Weapons in Russia and on the Use for Peaceful Purposes of Nuclear Materials from Weapons was signed in Paris.

This agreement opened the door to France's assistance in eliminating Russia's "Cold War legacy." The impetus for this decision was France's push to increase international and European security by destroying surplus WMD stockpiles in Russia.



Jacques CHIRAC,  
President of France

"After the tragic events of September 11, 2001, the G8 played a considerable role in the fight against terrorism. Yet this threat remains urgent. We will improve our means of counteracting this threat, supporting those countries that are in need of support. Much has been done to prevent terrorists from gaining access to weapons of mass destruction, in particular to weapons from former Soviet arsenals. France, together with its partners and Russia, is implementing a range of projects in this area."

Agreements were later concluded to make the bilateral cooperation concrete: France funded the construction of containers for the safe transport of nuclear weapons to Russian Ministry of Defense bases and Ministry of Atomic Energy nuclear warhead dismantlement facilities, the supply of special machining equipment used for nuclear weapons dismantlement, the construction of a storage facility for lithium hydride, and scientific research aimed at the modernization of Russian nuclear reactors enabling them to burn mixed uranium-plutonium (MOX) fuel. France has made a pledge of €750 million for the Global Partnership.

France planned to allocate €78.5 million for Global Partnership projects in 2003–2005. Of this sum, €40 million represent the French contribution to the EBRD's Northern Dimension Environmental Project (NDEP), while €38.5 million were to be spent on

bilateral projects related to submarine dismantlement, in particular at the Gremikha base on the Kola Peninsula, as well as on the securing of radioactive sources, on nuclear safety, and on chemical weapons destruction and programs aimed at the fight against bioterrorism. While France does not have a bilateral agreement with Russia in the sphere of submarine dismantlement, Paris can provide direct assistance in this area under the Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) Agreement. However, the activities in Gremikha only began in 2005, with the French supply of nuclear safety equipment. A radiation and engineering survey were under way in the summer of 2005. France announced plans to spend about €11 million in Gremikha, beginning with a feasibility study. Additional funds could be made available if the results of the feasibility study warrant them. France also plans to spend up to €7 million on refitting a solid radioactive waste incinerator at Zvezdochka Shipyard in Severodvinsk through 2007, and up to €3 million on the dismantlement and safe storage of radioisotope thermoelectric generators (RTG), initially in cooperation with Norway's ongoing program. As for assistance in the sphere of chemical weapons, an intergovernmental agreement has been prepared, and is scheduled to be signed before the end of 2005. France has announced its readiness to spend up to €6 million for an environmental survey of the Shchuchye CWDF; technical discussions with the Federal Industry Agency began in late 2004. Further, France would like to contribute up to €5 million for biosecurity and biosafety programs, mainly for the development of new tools against the threat of bioterrorism, through the ISTC.

### Regulatory Framework

As of early 2005, the following Franco-Russian agreements had been concluded and signed:

- Agreement between the Government of the Republic of France and the Government of the Russian Federation on Cooperation on the Safe Disposal of Nuclear Weapons in Russia and on the Use for Peaceful Purposes of Nuclear Materials from Weapons, November 12, 1992. The agreement was to remain in force for a period of ten years, and provided for the automatic extension with the agreement of both Parties;
- Agreement on cooperation to provide safe and secure transport of nuclear weapons in Russia. Signed in October 1993.



- Agreement on cooperation in nuclear weapons dismantlement in Russia. Signed in October 1993.
- Agreement on the secure storage of lithium hydride removed from dismantled Russian nuclear weapons, November 17, 1994.
- Trilateral Franco-German-Russian intergovernmental agreement (AIDA-MOX-2), June 2, 1998.
- Russian-French Declaration on Strategic Issues, February 10, 2003.
- Agreement on beginning the first phase of the project to dismantle the Lapse nuclear service ship. Signed by Murmansk Shipping Company and SGN, October 9, 2003.

In addition, France has signed the Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) Agreement. This agreement was ratified by the French Government in January 2005. An implementation agreement between Rosatom and the French Atomic Energy Commission (CEA, which manages France's bilateral cooperation under the Global Partnership) is scheduled to be signed by the end of 2005.

#### Results

Due to delays in concluding bilateral agreements to cover work under the Global Partnership, activities were paralyzed for the first two years. This issue was even addressed during the visit of Russian Prime Minister Mikhail Fradkov to France in November 2004.

Table 40

#### France: Distribution of Funding by Area (in millions)

Project	1992–1998	1998–2003	Funds committed, June 2005
Warhead destruction	\$5	–	–
Storage and destruction of materials obtained dismantling nuclear weapons	\$27	–	–
Nuclear weapons transport containers	\$14	–	–
AIDA-MOX 1,2	\$11	\$8.5	€1
AIDA-MOX 3 & plutonium disposition*	–	–	€72*
Lapse dismantlement	not available	not available	€2.5
Submarine dismantlement	–	–	€21
NDEP contribution	–	–	€40
Nuclear safety	not available	not available	€1
Chemical weapons elimination	–	–	€6
Biosafety/biosecurity	–	–	€5
<b>Totals spent/committed</b>	<b>\$65.5</b>		<b>€148.5</b>

\* France has pledged €2 million for the bilateral AIDA-MOX 3 program, which involves preliminary technical studies to prepare for industrial implementation of the Russian plutonium disposition program; in addition, France has promised €70 million for the Multilateral Plutonium Disposition Group, for implementation of the plutonium disposition program. France submitted a draft of the AIDA-MOX 3 bilateral agreement to Russia in November 2004. According to French sources, the program is subject to a Russian Government review of its policy concerning plutonium disposition, expected in the fall of 2005. Funding for the Multilateral Plutonium Disposition Group awaits the conclusion of a multilateral agreement, currently under negotiation.

#### Germany



Soon after Kananaskis, Germany declared a commitment of up to \$1.5 billion for Global Partnership, the third largest pledge after the United States and Russia.

Practical German-Russian cooperation on the dismantlement and elimination of nuclear weapons and materials began on December 16, 1992, when the Russian Federation and Germany signed an Agreement on Assistance in Eliminating Nuclear and Chemical Weapons, of unlimited duration. Later agreements set the areas of German-Russian cooperation:

- the modernization of physical protection at nuclear facilities;
- feasibility study of the possible use of Russian weapons-grade plutonium in power reactors;
- the creation of a pilot plant and then industrial facility for MOX fuel production in Russia;
- chemical weapons destruction; and
- nuclear powered submarine dismantlement.

From 1995 to 2002, Germany and Russia conducted prolonged negotiations over the relocation of the Siemens MOX fuel fabrication plant from Hanau to Russia. However, the project was not realized. During the negotiations, inadequate financial and technical preparations and the partners' failure to make concessions appeared at fault. As in 2000 Germany decided to no longer pursue the use of nuclear energy at home, the German Government has decided not to renew the 1997 trilateral cooperation agreement between Germany, Russia and France on Russian plutonium disposition, which expired on June 1, 2002.

#### Regulatory Framework

- Agreement on Assistance in Eliminating Nuclear and Chemical Weapons, December 16, 1992. Entered into force on March 7, 1993.
- Interministerial Agreement on Cooperation in the Safe Destruction of Chemical Weapons in Compliance with Environmental Protection Measures, October 22, 1993.
- Trilateral Agreement between the Governments of the Russian Federation, Republic of France, and the Federal Republic of Germany on Cooperation in the Field of the Civil Use of

One of the few Franco-Russian projects that has been undertaken and completed since the initiation of cooperation some twelve years ago was the construction of a storage facility for lithium hydride removed from dismantled nuclear weapons. On November 17, 1994, the ministers of foreign affairs of Russia and France, Andrei Kozyrev and Alain Juppé, signed an intergovernmental agreement on the secure storage of lithium hydride removed from dismantled Russian nuclear weapons. The agreement stipulated the turnkey construction of a storage facility in Russia for lithium hydride, a non-radioactive but toxic chemical removed during the weapons dismantlement process.

The new facility is located at the Novosibirsk Chemical Concentrates Plant (NZKhK), which during the Soviet era produced lithium for use in thermonuclear weapons. The storage facility was designed to hold 60 metric tons of lithium hydride waste. The design was developed by the French, while construction was undertaken by both France's Spi-Batignolles and Sibenergostroy, of Novosibirsk. The total cost of construction is a commercial secret; estimates of France's contribution range from \$20 to \$65 million.

Plans call for the lithium compounds to be re-utilized in the future. The original plans call for the production of lithium at NZKhK: the lithium hydride was to be reprocessed into lithium, which could then be used in various industries, from shoes to airplane construction. Under the agreement, France received the right to conduct inspections of the plant up to twice a year. On December 16, 1997, the facility was commissioned by a Russian State Commission.

#### Further Reading

"G8 Global Partnership: France's Contribution," CEA, September 2005.  
 Andrei Frolov, "Russia and France in the Mirror of the Global Partnership," *Yaderny Kontrol* No. 2 (Summer), 2003, pp. 147–160.  
 Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003), vol. 3, pp. 57–72.



**Table 41**  
Germany: Disbursement of Funding by Area (in millions)

Project	Expenditures, 1992–2004	Commitments, 2003–2010
Equipment for handling radioactive materials	\$12.5	unknown
Physical security upgrades	€20.17	€170
Pilot plant R&D	\$1.5	–
Fabrication of trial MOX fuel assemblies	\$10	–
Nuclear submarine dismantlement, construction of onshore reactor storage	€58.6	€300
NDEP projects	€2	€10
Chemical weapons elimination	€131.6 in 2002–2005	€300

Plutonium Resulting from the Dismantling of Russian Nuclear Weapons for a term of two years. Signed on June 2, 1998.

Global Partnership against the Spread of WMD. Signed on October 9, 2003.

#### Results

In 2005 one of the most significant Global Partnership projects involves German cooperation in the construction of an on-shore facility for the long-term storage of reactor compartments in Sayda Bay. The project involves the provision of infrastructure to Nerpa Shipyard so that three-compartment units can be chopped into one-compartment units, transported to Sayda Bay, and stored in a special long-term interim reactor compartment storage facility. Germany's Federal Ministry for Economy and Technology plans to allocate up to €300 million for work related to this project from 2003–2008. This funding has been approved through 2008 by a Bundestag commitment authorization. German planned funding in this sphere is indicated in Table 42.

The long-term interim storage project involves work at two more or less independent sites. One is the storage site itself with all of the attendant infrastructure: a concrete foundation with rails and drains, lifting equipment; hydraulic keel blocks to transport the reactors (Germany will supply about 50, for use at Nerpa Shipyard, docks, and the storage facility – each keel block has a load-bearing capacity of 400 tons), radiation protection shelters, and environmental safety systems. The second part of the project is the work at Nerpa Shipyard, where the submarines are cut up. Germany is providing the yard with dismantlement equipment to remove each reactor compartment from its adjoining two compartments and a hall where the reactor compartments will be hermetically sealed and provided with biological shields, preparing them for long-term storage. The reactors will then be transported to Sayda Bay in a floating dock, and stored at the on-shore facility for up to 70 years. In addition to submarine reactors, Germany plans to build an additional storage facility for nuclear service ships and hulls of submarines that cannot be dismantled at this time.

Germany is financing the manufacture of special pontoons to tow the submarines to the dismantlement facility, providing vehicles and equipment needed for reactor compartment transport. Germany has repaired two tugs belonging to the Nerpa shipyard and purchased a third in Greece for the Sayda site, helping overhaul the transport dock, and supplying equipment needed for the construction of the facility. At Russia's request, the construction of a computerized nuclear waste monitoring system is planned. Germany is also providing for radioactive waste produced at the site: Berlin paid for a PEK-50 LRW transport ship with a capacity of 50 cubic meters, which was given to Nerpa. Germany's Federal Ministry for Economy and Labor is also lobbying for Russia to decide to site an intermediate SRW storage site, for the storage of all Northern Fleet solid waste, at Sayda Bay.

The Sayda Bay project coordinator for Germany is Energiewerke Nord GmbH (EWN), which is cooperating with Russia's Kurchatov Institute and Nerpa Shipyard. The first section of the on-shore storage facility will hold 40 reactor compartments. In July 2006 first 7 compartments should be brought for long-term storage. The project has successfully overcome several unforeseen difficul-

ties: the granite foundation where the facility is being constructed had to be leveled off, and the bay had to be cleared of sunken vessels (Germany paid to scrap sixteen sunken surface vessels and other objects). In addition, the rails for the keel blocks were not properly installed in the beginning; in September 2005, these rails had to be reset. Germany has also continued to have some difficulties associated with access and taxation. Although Germany and Russia have agreed on a list of 30 people permitted access to the site, certain plans have had to be altered since visits must be declared two months in advance. Taxation and customs problems have largely been due to problems with local tax officials. To reduce the problem, Germany was able to persuade Russia to create a special customs zone at Nerpa Shipyard.

While most German assistance in the submarine sphere is aimed at the Northern Fleet, Germany is also providing a mobile crane for the Pacific, and is considering the provision of keel blocks as well.

The other important area of German-Russian cooperation is in the elimination of chemical weapons. It was Germany that helped Russia build the first chemical weapons elimination facility, in Gornyy (Saratov region), that was put into operation in December 2002. The final ton of chemical agent stored in Gornyy will be destroyed by the end of 2005. Russia has suggested using the Gornyy CWDF for the destruction of agent stored at other sites.

Germany plans to allocate a total of €300 million for the destruction of chemical weapons in Russia under the Global Partnership program. In 2003, Germany decided to help build one more chemical weapons destruction facility, in Kambarka (Udmurt Republic). The Kambarka CWDF is scheduled to commence operations in early 2006. As of August 2005, four German firms were working at the site: Lurgi Lentjes AG, and Eisenmann AG (thermal equipment), Gesellschaft für Entsorgung GmbH (GfE) (buildings, cistern cleaning), and M & W Zander GmbH (filters).

In May 2005, Germany began negotiations over an additional CWDF project with Russia: the construction of a CWDF at Leonidovka (Penza region), where nerve agents in munitions are housed. This project will be more ambitious than the Gornyy and Kambarka facilities, which

- Yearly, beginning in 1993, Russian Federation Government resolutions On the Provision of Notes Indicating the Russian Federation Government's Agreement to the Distribution of Gratis Assistance Provided by the Government of the Federal Republic of Germany for the Elimination of Chemical Weapons in Russia.
- Agreement between the Russian Ministry of Atomic Energy and the Federal Ministry of Economics and Labor of the Federal Republic of Germany on the Provision of Support for the Elimination the Nuclear Weapons which the Russian Federation has Pledged to Reduce through the Dismantlement of Decommissioned Nuclear Submarines from Russia's Northern Fleet, under the Framework of the

**Table 42**  
Germany: Funding for Submarine Dismantlement (in millions)

	2003	2004	2005	2006	2007	2008
Planned	€25	€59	€57	€57	€57	€45
Expended	€4.6	€54	€77*			

\* predicted



involved the destruction of lewisite and mustard gas in cisterns.

One final sphere of German assistance is in the upgrading of physical protection at nuclear facilities. An agreement between the Russian Ministry of Defense and German Ministry of Foreign Affairs on cooperation in the area of MPC&A was signed on October 6, 2003. The first contract was concluded in May 2004. The German contractor is Gesellschaft für Anlagen- und Reaktorsicherheit mbH (GRS). The Russian contractor is Aspekt-Konversiya. Germany is currently assisting in upgrading security at three Ministry of Defense facilities and several Rosatom facilities (including a facility in Seversk, the Mayak Plant, the Bochar and the Kurchatov Institutes, and institutes in Dmitrograd).

### Future Prospects for Cooperation

Russian-German cooperation under the Global Partnership is developing successfully, and could serve as a model of how to develop bilateral projects for other partner countries. Germany will continue its assistance in CW elimination, submarine dismantlement and MPC&A.

One new area of German-Russian cooperation slated to commence in the near future involves the removal of RTGs from the Baltic Sea region. Germany plans to pay for the removal of 96 RTGs, which will be transported by ship to Vyborg and then by rail to Mayak Plant. The RTGs, which power light beacons, will be replaced by new light-houses based on non-nuclear power sources, to be provided by Denmark.

### Further Reading

Andrei Frolov, "Germany and the Process of Eliminating Excess Nuclear Armaments in Russia," <http://www.pircenter.org/gp>

*The G8 Global Partnership: German-Russian Cooperation.* German Federal Ministry for Economics and Labor, May 2004.

Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003), vol. 3, pp. 73–81.

### Ireland

An official announcement that Ireland had joined the Global Partnership was made at the G8 Summit in Sea Island (United States) on June 8–10, 2004. At the time this guidebook was published, Ireland had yet to make a funding commitment or provide any information on its plans for cooperation. Ireland has not signed the Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) Agreement.

### Italy

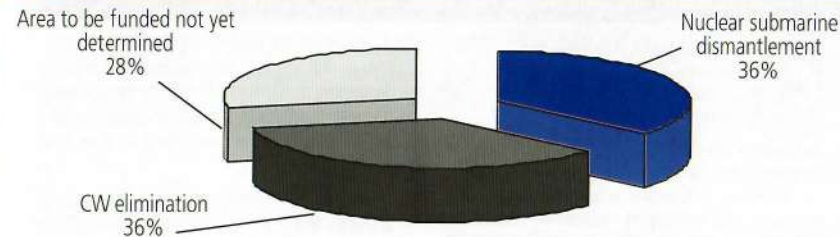
In the 1990s, Italian-Russian cooperation was limited to the sphere of nuclear safety. From 1993 through 1999, Italy allocated about \$5 million to this goal.

Bilateral Italian-Russian cooperation in dealing with WMD began on January 20, 2000, with the signing of the Agreement on Cooperation in the Destruction of Chemical Weapons in the Russian Federation. On October 17, 2001, a contract between the Russian Munitions Agency and Agater, an Italian company, was signed. This contract, on Italian participation in the creation of a gas pipeline to supply natural gas to Shchuchye from Shumikha, was made within the framework of the Italian-Russian intergovernmental agreement.

Under the contract, 15 billion Italian lire (€7.746 million) provided by the Italian Government would be used for the gas pipeline project. Project implementation began on June 1, 2002. Italy spent €7.7 million for the first portion of the gas pipeline, construction of which was completed in 2004. On April 17, 2003, an Additional Protocol to the intergovernmental agreement of 2000 was signed, on cooperation in building engineering infrastructure in Shchuchye. Construction of one more portion of the gas pipeline to Shchuchye can begin after the protocol is signed; Italy has pledged €5 million for the project in 2005–2006.

Italy has acknowledged Russia's chief priorities and agreed to continue to fund the destruction of chemical weapons, as well as begin funding submarine dismantlement projects. Italy plans to cooperate with Germany, since it does not have experience in this area.

Italy: Distribution of Funds by Area



On November 5, 2003, during an official Russian presidential visit to Italy, two more intergovernmental bilateral agreements were concluded on cooperation in the areas of:

- the destruction of stockpiles of chemical weapons in the Russian Federation; and
- the dismantlement of decommissioned Russian nuclear-powered submarines, and the safe handling of radioactive wastes and spent nuclear fuel.

Under these agreements, Italy plans to allocate €360 million for chemical weapons destruction and €360 million for submarine dismantlement over a period of ten years. Italy's parliament ratified the 2003 bilateral agreements with Russia on October 28, 2004, while Russia completed its ratification of the documents in June 2005.

### Regulatory Framework

1. Agreement between the Government of the Russian Federation and the Government of the Republic of Italy on the Provision of Italian Assistance in the Destruction of Chemical Weapons Stockpiles in the Russian Federation of January 20, 2000.
2. Russian Government Resolution on Changing the Implementing Agency in Russia under the Agreement between the Government of the Russian Federation and the Government of the Republic of Italy on the Provision of Italian Assistance in the Destruction of Chemical Weapons Stockpiles in the Russian Federation, September 25, 2001.
3. Additional Protocol to the Government of the Russian Federation and the Government of the

Republic of Italy on the Provision of Italian Assistance in the Destruction of Chemical Weapons Stockpiles in the Russian Federation of January 20, 2000 (April 2003).

4. Agreement between the Government of the Russian Federation and the Government of the Republic of Italy to Cooperate in the Disposition of Decommissioned Russian Nuclear Submarines, Safe Handling of Radioactive Wastes and Spent Nuclear Fuel (Rome, November 5, 2003).
5. Agreement between the Government of the Russian Federation and the Government of the Republic of Italy on Cooperation in the Destruction of Chemical Weapons Stockpiles in the Russian Federation (Rome, November 6, 2003).

### Chemical Disarmament

Under the November 2003 agreement signed in Rome, Italy will provide up to €360 million in gratis assistance to Russia for the design and construction of a chemical weapons destruction facility in Pochep, Bryansk region, and will supply needed equipment and provide other services.

The document stipulates that a maximum of up to 10% of the assistance provided "is to be used for the payment of remuneration and expenses connected to the management and implementation of the project by the Italian party." The authorized agencies that are to implement the agreement were to create an organizing committee that would make decisions on a consensus basis and monitor implementation, as well as approve par-



**Agreement between the Government of the Russian Federation and the Government of the Republic of Italy to Cooperate in the Disposition of Decommissioned Russian Nuclear Submarines, Safe Handling of Radioactive Wastes and Spent Nuclear Fuel, Rome, November 5, 2003.**

- Italy will provide gratis assistance in the amount of €360 million over the course of ten years for the fulfillment of work, supply of goods, and provision of services (Article 1).
- Cooperation in the spheres of: dismantlement of nuclear-powered submarines, nuclear-powered surface ships, and nuclear service ships; treatment, transport, and storage of radioactive wastes and SNF; creation and support of nuclear facility physical protection; rehabilitation of sites with radioactive contamination; creation and support of infrastructure for nuclear submarine dismantlement (Article 2).
- The authorized oversight agencies are:
  - on the part of Russia: Minatom;
  - on the part of Italy: the Ministry of Productive Activities, which entrusts SOGIN with general coordination, managerial, and operational responsibilities in the realization of the Agreement (Article 3).
- In order to monitor implementation of the Agreement and to hold consultations between the competent authorities of both Parties a managerial committee will be established, consisting of two representatives from each Party (Article 4, paragraph 1).
- In order to conduct technical and managerial activities and make operational decisions related to project implementation, a joint project management organization will be established (Article 4, paragraph 2).
- Projects will be implemented on the basis of separate contracts concluded between Russian organizations acting as contractors and the main supplier, chosen by mutual agreement on the basis of a tender (Article 5, paragraph 1).
- By request, the Italian Party has the right within 60 days after the issuance of a request to undertake an inspection of the use of any assistance (Article 8, paragraph 2).

### Nuclear Submarine Dismantlement

Under the agreement with Italy on the disposition of decommissioned Russian nuclear submarines of November 5, 2003, the implementation of projects in this area was entrusted to Italy's Società Gestione Impianti Nucleari (Company for Nuclear Plants Management, or SOGIN). In mid-January 2004, SOGIN experts visited Zvezdochka Shipyard in Severodvinsk in order to examine the feasibility of carrying out the Italian assistance project at the site. Soon after, the Russian Ministry of Atomic Energy held technical consultations with the SOGIN experts on questions related to submarine dismantlement cooperation. Several areas of cooperation were identified at the Russian-Italian consultations. The main areas are as follows:

- the construction of a regional radioactive waste storage facility in northwest Russia;
- the creation of a regional solid radioactive waste treatment facility;
- physical protection upgrades at five shipyards

that undertake nuclear submarine dismantlement and two former on-shore bases, in Andreyeva Bay and Gremikha, where Russia stores SNF and radioactive waste.

The implantation period will last for ten years, with an automatic extension of two years. Italy has been considering funding the dismantlement of the *Admiral Ushakov* nuclear-powered battle cruiser, which will cost a total of about €40 million. In late 2004, Italy agreed to fund the first stage in this project: a feasibility study for the ship's defueling and environmental assessments.

The Russian-Italian agreement on submarine dismantlement was ratified by Russia in July 2005. Currently Rosatom negotiates with Italian partners on possible contracts under this agreement. Italian government plans to allocate for submarine dismantlement related projects some €8 million in 2005 and up to €44 million in 2006.

### Further Reading

Giancarlo Bolognini, "Italian Approach to the Global Partnership," Presentation at the international conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," April 23–24, 2004. Available at <http://www.pircenter.org/gpconference/data/bolognini.pdf>

Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003), vol. 3, pp. 100–108.

### Japan

Japan's cooperation with Russia began in 1993, after some 500 cubic meters of liquid radioactive waste (LRW) from a Russian tanker leaked in the Pacific Ocean, when the Japanese Government decided to pledge \$100 million for the destruction of nuclear weapons in the former Soviet Union. By March 1994, Japan had concluded corresponding bilateral agreements with Kazakhstan, Belarus, and Ukraine. Tokyo allotted \$30 million for projects in Kazakhstan, Belarus, and Ukraine, and \$70 million for Russia. The latter funds were for projects related to sub-

marine dismantlement in the Russian Far East and for the construction of a liquid radioactive waste (LRW) treatment plant in the region.

After visits by the Japanese Minister of Foreign Affairs (May 1999) and Japanese Prime Minister Keizo Obuchi (June 1999) in Russia, Tokyo announced a pledge of another \$200 million (including money from the earlier pledge that had yet to be spent) for the implementation of new projects to eliminate the "legacy of the Cold War" in the former Soviet states.

When the G8 Global Partnership was established in Kananaskis in June 2002, Japan obligated itself to contribute to "...concrete cooperative projects, first and foremost in Russia... somewhat more than \$200 million," with half of this sum for the disposal of excess weapons plutonium.

**"The cooperation between Japan and the Far East has huge strategic and geopolitical importance not only for both countries but also for the blossoming and the stability of northeastern Asia as a whole."**

**Kazunori Tanaka, Parliamentary Secretary for Foreign Affairs**

During an official visit by Japanese Prime Minister Junichiro Koizumi to Russia in January 2003, Japan announced that it would commit \$100 million to nuclear submarine dismantlement and \$100 million for the destruction of Russian plutonium.

### Areas of Cooperation and Results

*The dismantlement of decommissioned nuclear-powered submarines, management of spent nuclear fuel, and construction and operation of an LRW treatment plant in the Russian Far East.*

Japan is assisting Russia in the dismantlement of multipurpose nuclear submarines. In May 1999, after the visits of the Japanese minister of foreign affairs and prime minister to Russia, Japan issued documents detailing its Plan for the Dismantling of Decommissioned Nuclear Submarines in the Far East Region. This plan envisioned the following projects:

- unloading SNF from nuclear submarines and transferring it to containers for shipment to storage facilities, the construction of SNF stor-



Table 43

## Japan: Pledged and Disbursed Funding (in millions of dollars)

1993		1999		2002-2010	
pledged	expended	pledged	expended	pledged	expended
\$70	\$36	\$200 (\$34 since 1993)	\$101.64	\$200	\$7 million for submarine dismantlement

age facilities at the Zvezda Shipyard, and the reconstruction of a railway between Bolshoy Kamen and Smolyaninovo (a town on the TransSiberian Railway) on which SNF assemblies are sent in special railcars to the Mayak reprocessing facility. However, due to Japanese concerns that the railway might be used for active military use, and Russia's failure to provide adequate assurances to the contrary, Japan has dropped this project from its funding plans;

- conversion of the *Pinega* tanker for use as a transport vehicle. After studying the technical and funding aspects of the *Pinega* reconstruction project, Japan and Russia realized that it was too expensive, and the plan has been "buried"; and
- dismantlement of a Shchuka-class (NATO name: Victor) nuclear submarine at the Zvezda Shipyard. On June 28, 2003, Russian Deputy Minister of Atomic Energy Sergei Antipov and Japanese Ambassador to Russia Issei Nomura signed an agreement on the dismantlement of one Victor III submarine. The cost of dismantling one submarine was said to be \$5 million. By November 2004, the dismantlement work had been completed; Japan reports allocations of \$7 million on the pilot project.

In January 2005, the board of the Russian-Japanese Committee for Cooperation to Assist the Destruction of Nuclear Weapons Reduced in the Russian Federation decided to consider the dismantlement of five additional submarines. The five submarines that have been proposed for Japanese-funded dismantlement are: three Victor IIIs, one Victor I, and one Charlie-class submarine. An executive arrangement on dismantling these five submarines was signed on November 21, 2005 in Tokyo by Rosatom Deputy head Sergey Antipov and Ambassador of Japan to the Russian Federation Issey Nomura.

### *The disposition of weapons plutonium no longer needed for defense purposes*

The Japan Nuclear Cycle Development Institute (JNC) is the entity participating in this project on behalf of Japan. JNC is conducting joint research with the Scientific Research Institute of Atomic Reactors (NIAR) in Dmitrovgrad and the Institute of Physics and Power Engineering (IPPE) in Obninsk. Japanese-Russian cooperation in the sphere of plutonium disposition is being realized in three stages:

- through 2003: scientific designs developed at IPPE and the production of three vibropacked MOX fuel assemblies at NIAR, and their experimental irradiation in the BN-600 reactor, as well as the receipt of a license for project implementation;
- 2003–2006: demonstration of MOX fuel use and the simultaneous modernization of the NIAR installation to increase its capacity and meet the requirement of loading the core with 40–50 assemblies per year; and
- 2007–2010: refinement of existing installations for the production of 250 vibropacked MOX fuel assemblies per year, and activities to extend the service life of the BN-600 reactor.

Although the time frame for project implementation has shifted somewhat, we can already talk about preliminary results. The successful test burning of MOX fuel (created from 60 kg of Russian weapons plutonium) in the BN-600 reactor in Beloyarsk was announced in 2002. Plans call for increasing to an annual level of 0.3 tons of plutonium, and then 1.3 tons per year beginning in 2007.

### *Cooperation in the retraining of former military and weapons scientists for civilian employment*

Japan is providing assistance in this area through the International Science and Technology Center (ISTC). Japan has funded the ISTC since its founda-

tion, providing some \$60 million dollars for about 200 scientific projects. Japanese partner organizations both private enterprises and governmental organizations provide funding for projects through the ISTC Partner Program. Over 40 Japanese companies had registered as ISTC partners. Japanese partner organizations have funded some 14 projects at a total cost of more than \$2 million.

Japan initiated and sponsors the Japan Workshops program. The workshops are held in Japan by the Japanese government and the ISTC. The goal of the workshops is to acquaint Japanese scientific and business circles with advanced Russian technologies, and to organize exchange of scientific information. Scientists from the CIS are invited to participate in the workshops – specialists in particular spheres present reports related to the particular theme. In 2003, the ISTC merged the Japanese, EU and U.S. workshop programs into the Partner events program.

### **Regulatory Framework**

*Agreement between the Government of Japan and the Government of the Russian Federation Concerning Cooperation for the Elimination of Nuclear Weapons Reduced in the Russian Federation and the Establishment of a Committee on this Cooperation (October 13, 1993).*

The Government of Japan and the Government of Russia cooperate in the safe elimination of nuclear weapons reduced in the Russian Federation and in the solution of environmental problems related to the elimination of nuclear weapons.

- To achieve these aims, the Parties established as an inter-governmental body a Committee on Cooperation for the Elimination of Nuclear Weapons Reduced in the Russian Federation.

- The Committee carries out the following functions: sets the priority fields of cooperation for the elimination of nuclear weapons reduced in the Russian Federation; develops concrete cooperation plans for the elimination of nuclear weapons reduced in the Russian Federation on the basis of the needs of the Government of the Russian Federation; enters into arrangements with relevant authorities, in which details and procedures of cooperation for the elimination of nuclear weapons are specified.

- The Committee consists of a Governing Council, made up of one representative appointed from Japan and one from Russia, and a Technical Secretariat, headed by an Executive Director (appointed by the Japanese government with the consent of the Governing Council), that is located in Japan. The Governing Council, which makes decisions by consensus, sets priorities and decides whether projects can be implemented. The Technical Secretariat administers the funds contributed, and works to attract various specialists for Committee activities.

*Japan-Russia Memorandum of Understanding on the Promotion of Cooperation for Nuclear Disarmament, Non-Proliferation and Nuclear Weapons Disposition (September 4, 2000)*

The memorandum set several priority areas for Japanese-Russian cooperation: dismantlement of decommissioned nuclear submarines in the Russian Far East; completion of construction of the Landysh LRW treatment facility; promotion of conversion in Russia through the ISTC, and the broadening of cooperation in retraining military personnel; and disposition of plutonium no longer required for defense purposes.

Figure 23  
System for the Provision of Japanese Assistance to Russia



Table 44

Japan: Disbursement of Funding by Project				
Project	Funding	Implementation Period	Responsible Party (contractor)	
			Russia	Japan
"Star of Hope" – dismantlement of five submarines in the Russian Far East	About \$8 million for the dismantlement of each submarine	2005–2010 Implementation Arrangement signed in 2005	Rosatom ↓ (Zvezda Shipyard, Mayak)	Disarmament, Nonproliferation and Science Department, Ministry of Foreign Affairs
Dismantlement of one <i>Victor III</i>	\$7 million	Completed in 2004	Rosatom ↓ (Zvezda Shipyard, Mayak)	MOFA Disarmament, Nonproliferation and Science Department
Plutonium disposition	\$53.5 million	1999–2020	Rosatom ↓ (NIIAR, IPPE)	Ministry of Education, Culture, Sports, Science and Technology (JNC)
Construction of <i>Landysh</i> LRW treatment facility	\$36 million	1993–2001	Rosatom ↓ (Amurskiy Shipyard, Zvezda Shipyard)	MOFA Arms Control and Disarmament Division, MOFA Nonproliferation, Science and Nuclear Energy Division (Crown Agents)
Redirection of former military personnel and weapons scientists	\$60 million	Member of ISTC secretariat since its establishment in 1992	ISTC secretariat, Moscow	ISTC ↓ (over 40 Japanese partner organizations)

## Further Reading

Natalia Beloborodova, "Russian-Japanese Cooperation under the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," *Yaderny Kontrol* No. 3 (Fall) 1993, pp. 139–156.

Robert Einhorn and Michèle Flournoy, *Protecting*

*Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003), vol. 3, pp. 109–122.

## Netherlands

The Netherlands joined the Global Partnership in June 2003, soon after the G8 Summit in Evian, and has also signed the Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) Agreement. The Netherlands has pledged to provide up to €24 million for the Global Partnership. The Dutch priorities are CW destruction and halting plutonium production in Russia.

## Chemical Disarmament

The bilateral agreement between Russia and the Netherlands in the sphere of chemical weapons disarmament was signed on December 22, 1998. According to the document, the Netherlands will help Russia in the construction of a CWDF in Gornyy, Saratov region. The first project implemented under the agreement was the building of an electricity substation transformer. The Netherlands plans to dedicate €11.34 million

towards the realization of the agreement. Initially, the Netherlands planned to assist with the Kambarka CWDF, but later the focus of cooperation shifted to Gornyy and Shchuchye.

In 2002, the Netherlands expended €2.2 million on equipment for the electric system in Gornyy.



**Arend MEERBURG, Special Adviser, Security Policy Department, Ministry of Foreign Affairs of the Netherlands**

"There are different ways for donors to be involved in CW destruction. Together with Russian experts and companies, one could be deeply involved in a project utilizing consultants from the donor country, their companies, and maybe their equipment and technology. At the other extreme, a smaller donor country could give the money to the Russian authorities to acquire the – mainly Russian – equipment needed, of course with the necessary safeguards. A simple structure, and probably the best value for money: nearly no overhead costs.... A smaller donor may also channel its money through another donor with a larger project to avoid having to negotiate about its own conditions...."

On November 5, 2003, Tiddo Peter Hofstee, the Dutch ambassador to Russia, and general director of the Russian Munitions Agency Viktor Kholstov signed an executive agreement according to which the Netherlands will provide €4 million for equipment to reconstruct an electricity substation supplying the CWDF in Kambarka (Udmurtiya).

In 2005, the Netherlands joined the work of the United Kingdom in Shchuchye, declaring a pledge of €1.5 million to be administered by the United Kingdom to speed the conclusion of the construction process of the Shchuchye CWDF. A Memorandum of Understanding to this effect was signed on December 8, 2004.

## Cooperation in the Nuclear Sphere

The legal basis for the Netherlands' cooperation with Russia in the nuclear sphere is the bilateral framework agreement of 2000. This agreement envisions Dutch assistance in the destruction of nuclear warheads and materials, as well as the conversion of related Russian facilities. In June 2005, the Netherlands agreed to contribute €1 million to the U.S. Department of Energy Elimination of

Weapons Grade Plutonium Production Program to support the shutdown of the reactor in Zheleznogorsk.

Earlier plans called for a Dutch pledge of €2.7 million to be spent on the disposition of weapons-grade nuclear materials or the transport of spent nuclear fuel unloaded from decommissioned submarines.

In November 2003, the Netherlands announced that it was joining the EBRD's Northern Dimension Environmental Project (NDEP) with a contribution of €10 million.

## Further Reading

Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003), vol. 3, pp. 123–134.

Arend Meerburg, Ministry of Foreign Affairs of the Netherlands, presentation at the international conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," April 23–24, 2004. Available at <http://www.pircenter.org/data/club/meerburg.pdf>

## New Zealand



An official announcement that New Zealand had joined the Global Partnership was made at the G8 Summit in Sea Island (United States) on June 8–10, 2004.

On May 30, 2004, in a joint statement by New Zealand Minister of Foreign Affairs and Trade Phil Goff and Minister for Disarmament and Arms Control Marian Hobbes it was announced that the country would provide 1 million New Zealand dollars (about \$600,000) for a chemical weapons destruction project in Russia.

New Zealand will fund the refurbishment of an electricity substation in Shchuchye through the United Kingdom's program with Russia. Canada and the Czech Republic are also participating in the project.





## Norway

Norway was the first non-G8 country to announce its participation in the Global Partnership. By joining the G8 initiative at Evian in June 2003, Oslo further deepened a history of providing assistance that began in 1995. For the past decade, Norway has been active in a variety of projects in the sphere of nuclear and environmental safety as well as the nonproliferation of WMD, related materials, and technologies. These projects have included radioactive waste management, the transport and storage of spent nuclear fuel, and nuclear submarine dismantlement. To date the bulk of funding has been directed towards Russian-Norwegian cooperation related to nuclear submarine dismantlement.

Since 1995, the Norwegian parliament has allocated over NRK1 billion (approximately €125 million euro) on such projects. Oslo plans to fund another \$118 million on various projects in Russia over the next 10 years (that is, about \$12 million per year, an amount similar to Japan's Global Partnership commitment, placing Norway in the same league as the G8 countries in terms of project funding under the Global Partnership).

On May 26, 1998, Russia and Norway signed their first bilateral agreement on cooperation in connection with the dismantling of Russian nuclear-powered submarines withdrawn from the Navy's service in the Russian Northwest, and the enhancement of nuclear and radiation safety.

The first Russian-Norwegian document under the Global Partnership was the June 27, 2003 agreement according to which Norway would fund the dismantlement of two Northern Fleet Shchuka (NATO name Victor II) class submarines. One of the contracts was concluded with the Nerpa Shipyard (Murmansk region), and the other with Zvezdochka Shipyard (Arkhangelsk region). The Russian Federation Government has mandated Rosatom to be the state contractor and coordinator of this work on behalf of Russia. Then-Deputy Minister of Atomic Energy (now Rosatom Deputy Director) Sergei Antipov, Nerpa Deputy Director for Manufacturing Aleksandr Gorbunov, and Zvezdochka Chief Engineer Oleg Frolov signed the documents on behalf of Russia, while Deputy Minister of Foreign Affairs Kim Traavik and

Norwegian Ambassador to Russia Oyvind Nordsletten signed on behalf of Norway. The Norwegian Government allocated \$10 million for the dismantlement of the two Russian submarines, and these funds were received in the bank accounts of the two Russian shipyards. Each contract was worth some \$6 million. These funds are being expended, in part, on the unloading, transport, and temporary storage of the submarines' spent nuclear fuel until it can be reprocessed. On May 11, 2005, Norway signed an executive agreement on dismantling the third Russian multipurpose submarine (NATO name Victor III). The dismantling is on schedule at Nerpa shipyard. It is worth noting that UK experts collaborated with the Norwegian experts on all stages of this project. The Norwegian general contractor is Storvik and Co. Negotiations on Norway's next executive agreement began in fall 2005.

### Regulatory Framework

Agreement between the Government of the Russian Federation and the Government of the Kingdom of Norway on Environmental Cooperation in Connection with the Dismantling of Russian Nuclear Powered Submarines Withdrawn from the Navy's Service in the Northern Region, and the Enhancement of Nuclear and Radiation Safety.

This agreement was signed on May 26, 1998, and was valid for a term of five years. It expired in 2003. A new agreement is under preparation. Until its signature projects are continuing within the framework of the Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) Agreement.

The 1998 agreement mentions several concrete projects:

1. *The emptying and decommissioning of the storage facility for spent nuclear fuel from Russian nuclear-powered submarines in Andreyeva Bay [and the] design, construction and commissioning of a temporary storage facility for solid radioactive waste at Andreyeva Bay.* The realization of this project was hindered by the Russian Ministry of Defense's unwillingness to allow international experts access to the facility in Andreyeva Bay. Despite this, Norway began to implement a subsidiary project, allocating about \$817,000 to divert a

stream that flowed from the SNF storage depot into the Kola Peninsula's Zapadnaya Litsa Bay. The project was completed in September 1999. Russians conducted all of the work at the facility. Norway received a report on the work done in the form of photographs. The rehabilitation of the on-shore technical facility and site at Andreyeva Bay remains a high priority task. In September 2001 funding of work to refurbish and augment Andreyeva Bay infrastructure began, in the amount of over \$3 million.

2. *Establishment of an interim storage facility for spent nuclear fuel from ships' reactors at the Mayak Production Association (Chelyabinsk region).* A study of the possible construction of a dry storage facility at the Mayak combine was completed. Minatom disagreed with the proposed approach, and continues to insist on completing construction of a wet storage facility. The research was jointly funded by the European Union, Norway and Sweden. Norway expended \$209,000 on the project.
3. *Design, construction and commissioning of a specialized self-propelled vessel for the transport of containers with spent nuclear fuel.* The consideration of the possible provision of a service ship for SNF transport to the Russian Navy began in 1995. The Norwegian company Kværner Maritime conducted the research and presented a project description, but the work did not proceed any further. Among the reasons for this that have been mentioned was the lack of a liability agreement with Russia. The Norwegian Ministry of Foreign Affairs allocated \$423,000 for the work.
4. *Construction and commissioning of four specialized railway cars for the transport of containers with spent nuclear fuel.* Norway appropriated \$3.1 million for the construction of four TK-VG-18 railcars for the transport of SNF unloaded from Northern Fleet and Pacific Fleet nuclear submarine reactors to the Mayak reprocessing facility. Previously, Russia only had a single echelon made up of four railcars. The new railcars were built at the Izhor'sk Plant, which had built the existing TK-VG-18 railcars. The project was completed in 2000.
5. *Modernization and commissioning of an interim storage facility for liquid radioactive waste at the*

*Zvezdochka Shipyard (Severodvinsk, Arkhangelsk region).* This project related to the modernization of so-called Building 159 at Severodvinsk's Zvezdochka Shipyard. The storage depot includes two Type A-02 tanks for liquid radioactive waste (LRW) storage. Each tank has a capacity of 500 m<sup>3</sup>. The tanks are located next to the site of a proposed LRW treatment installation and are used as a buffer storage depot. Modernization work began in May 1998 and was completed in August 1999. Norwegian expenditures on the project totaled \$4.3 million.

6. *Delivery of a mobile facility for treatment of liquid radioactive waste (Murmansk).* The project goal is the design and construction of a mobile LRW treatment facility for the Northern Fleet. To date no clear funding or implementation arrangements for this project have been made.
7. *Dismantling of the floating technical base "Lepse" (Murmansk).* See results, below.
8. *Modernization of the facility for treatment of liquid radioactive waste at the repair and technical enterprise "Atomflot" (Murmansk).* See results of the so-called Murmansk Initiative, below.

**"We give high marks to Norway's assistance, and our Norwegian partner's readiness to continue and develop cooperation. The very best mutual relationship has been established between the two partners."**

**SevRAO First Deputy Director Vladimir Khandobin**

### Results

International cooperative projects to solve issues related to Russian multipurpose nuclear submarine dismantlement have been under development since 1995. Norway was the first to conclude an agreement with Russia on the dismantlement of multipurpose submarines.

Initially, plans called for the corresponding agreement to be signed on June 12, 2003, but at the meeting the partners could not agree on the text due to the lack of provisions for funding the storage and reprocessing of the SNF (which was also not provided for in the Russian budget). The Convention on Nuclear Assistance to Other States, ratified by Norway in 2002, prohibits Norway from



Norway: Disbursement of Funding by Project

Table 45

Project	Funding	Implement- ation Period	Responsible Party (contractor)	
			Russia	Norway
Construction of a water main at Andreyeva Bay to provide water for site installations	\$1 million	2002	Minatom	Norwegian Ministry of Foreign Affairs (MFA)
Murmansk Initiative	\$2 million	1994–2004	Atomflot	Norwegian MFA
Construction of specialized railway cars for SNF transport	\$3.1 million	1998–2002	Minatom	Norwegian MFA
RTG dismantlement	€4.6 million	2002–2005	Minatom	Government of Norway's Finnmark province
Kola and Leningrad NPP safety improvements	\$24.8 million	1993–2005	Minatom	Norwegian MFA
Norwegian Village: construction of administrative and residential complex at Andreyeva Bay	\$2 million	2002	Minatom	Government of Norway's Finnmark province
Construction of 16 km road at Andreyeva Bay to enable transport of SNF from the site	\$2 million	2002–2003	Murmansk region Administration & Minatom	Government of Norway's Finnmark province
Physical protection upgrades, infrastructure, Andreyeva Bay	€5.3 million	2003–2005	Murmansk region Administration & SevRAO	Government of Norway's Finnmark province
Re-equipping Nerpa Shipyard for the dismantlement of <i>Victor-class</i> submarines	\$2.6 million	2003	Nerpa Shipyard	Norwegian MFA
Dismantlement of 2 Victor II and 1 Victor III multipurpose submarines	€15 million	2003–2005	Minatom, Nerpa, and Zvezdochka	Norwegian MFA
Dismantlement of <i>Lepse</i> floating technical base	\$3 million	2002–2003	Minatom	Norwegian MFA
Development of equipment for the NPS safe transport, AMEC project	€1.5 million,		Minatom	Norwegian MFA
Contribution to NDEP	€10 million			Norwegian MFA
Contribution to ISTC	\$350,000			Norwegian MFA
Provision of electrical equipment to Shchuchye	\$2.25 million	2002	Rosprom	Norwegian MFA

using funds allocated for nuclear dismantlement for the reprocessing of SNF.

Since the initial contract was not signed, a new contract was drawn up. It too provided for Norway to pay \$10 million to Nerpa Shipyard and Zvezdochka, but under this second contract Norway would pay for SNF unloading, submarine dismantlement, transport to a safe SNF storage facility, and storage until the time of reprocessing (but not reprocessing itself). The new contract was signed on July 27, 2003. The agreement served as a pilot project, attracting environmental assistance funding from other European states to Murmansk region. Since that time, Norway has funded the dismantlement of three Northern Fleet submarines. Negotiations on dismantling the fourth submarine are currently underway. Norway intends to dismantle at least one submarine per year. Since fall 2005, Russia and Norway have been discussing the possibility of starting a second project before the end of 2005. If implemented, this project would continue into 2006, and come in addition to a scheduled NPS next year.



Jan PETERSEN, Norwegian Minister of Foreign Affairs (2001–2005)

"In my opinion, Russia-Norway joint efforts to scrap nuclear submarines are proceeding well. This is a very important effort for us to solve environmental issues in northern Europe through concerted efforts."

Another important area of Norwegian assistance is in the retiring of radioisotope thermoelectric generators (RTGs). Norway has financed the removal of 31 RTGs containing 51 radioactive sources in 2005. So far, Norway has financed a total of 86 RTGs. By the end of this year, 57 beacons will have had solar cell panels installed.

At the request of Russian authorities and due to unexpected available capacity, Norway has decided to finance the removal, dismantling and final storage of a further 10 RTGs in 2005. This will bring the total amount of dismantled RTGs in the geographical area covered by the Norwegian-Russian Memorandum of Understanding of February 2005 (Murmansk and Arkhangelsk Regions including Novaya Zemlya Island and Nenets District) up to 96. Some 75 RTGs remain to be dismantled in this region. The aim is to complete this work by 2008. In

future Norway does not exclude working on RTG dismantling in other regions as well. In summer 2005, Norway signed so-called "piggy-back" agreements with Canada, which agreed to contribute C\$500,000 and France, which agreed to contribute \$300,000 to the ongoing Norwegian RTG-dismantlement project.

Norway contributes to chemical weapons elimination as well. In 2005 it allocated \$0.5 million via the UK CW destruction program in order to procure electric power supply equipment for Shchuchye CWDF.

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Anna Abayeva, "Russia and Scandinavia – the Enlargement of Global Partnership Programs," *Yaderny Kontrol* No. 1 (Spring), 2004, pp. 107–130.

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#### Poland



Poland officially joined the Global Partnership in June 2003, although its assistance to Russia in eliminating its "Cold War legacy" began earlier.

Poland has clearly defined the sphere of its cooperation with Russia under the Global Partnership: the destruction of chemical weapons. On December 17, 2002 the Agreement between the Government of the Russian Federation and the Government of the Republic of Poland on Cooperation in the Field of Chemical Weapons Destruction was signed. The agreement emphasizes scientific cooperation and the use of technologies from both countries in the sphere of chemical weapons destruction. Poland pledged 400,000 zloty (about \$100,000) for its initial contribution to CW destruction in Russia.

Polish assistance is largely being provided in the form of technical assistance, which includes financing scientific research, engineering development, and the production and delivery of special equipment.

An implementing agreement to the intergovernmental agreement of 2002 (the Technical



Implementing Agreement between the Russian Munitions Agency and the Ministry of Foreign Affairs of the Republic of Poland) was signed in Moscow on December 17, 2003. It provides for concrete projects and their implementation periods. The first project was called Technology Development and the Construction of an Experimental Industrial Installation for the Treatment of Reaction Products Generated during Lewisite Destruction. The main project implementer on behalf of Poland is the Chemical Salvage Unit (KhSch) in Tarnow. The State Scientific Research Institute of Organic Chemistry and Technology (GosNIIOKhT) is implementing the project for Russia.



**Stefan MELLER, Minister of Foreign Affairs of Republic of Poland, Ambassador to Russia (2002–2005)**

"I would like to express hope for continued cooperation between Polish and Russian organizations within the Global Partnership, and hope that these efforts will be supported by organizations from other countries."



**Viktor KHOLSTOV, General Director of the Russian Munitions Agency (currently director of the Federal Industry Agency's Center for Conventional Problems and Disarmament Programs)**

"The signing of the technical implementing agreement between Poland's Ministry of Foreign Affairs and the Russian Munitions Agency is a significant event in the realization of the Global Partnership program."

Lewisite contains arsenic, a valuable material that is used in the electronics industry. Polish technology developed by the scientists of the Military Technical Academy of Poland makes it possible to extract chemically pure arsenic from the lewisite reaction products. According to Krzysztof Paturej, a senior official in the Polish Ministry of Foreign Affairs who is overseeing cooperation with Russia in the area of chemical disarmament, one of the values of the Polish method is that it is inexpensive and ecologically clean. Project participants form joint working groups to maintain communications. When the project is completed, it will be possible to use the research results to treat arsenic compounds

in Russian and Polish research institutes. Preliminary data for the design of the experimental industrial plant were released in 2004, while the supply and installation of equipment and subsequent preparatory and commissioning work are scheduled for 2005.

The construction of the experimental industrial installation for the treatment of reaction products generated during Lewisite destruction will cost an estimated €8 million.

In addition, the 2002 agreement provided for the creation of a Polish-Russian Technological and Industrial Park in Tarnow (Poland). Former Russian weapons scientists will be retrained at the Tarnow technopark in areas like economics, business administration, marketing, quality control, foreign languages, and intellectual property rights. Plans call for many international seminars and conferences to be held at the technopark, which has as its main goal the commercialization of Russian research and the peaceful use of the intellectual potential of former Russian chemical weapons scientists.

#### Further Reading

Krzysztof Paturej, "Poland's Participation in the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," presentation at the international conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," April 23–24, 2004. Available at <http://www.pircenter.org/data/club/paturej.pdf>.

#### Republic of Korea



An official announcement that Republic of Korea had joined the Global Partnership was made at the G8 Summit in Sea Island (United States) on June 8–10, 2004. As of August 2005, Republic of Korea had not announced a pledge or the areas of its future cooperation under the Global Partnership, aside from its participation in the International Science and Technology Center, to which it has contributed some \$6 million since December 1997. The Republic of Korea has started discussions with Norway on the possibility of its participation in a Norwegian submarine dismantlement project.



#### Russian Federation

The Global Partnership is among Russian top priorities in the area of ensuring national and international security.

#### Funding

Russia has pledged \$2 billion for the Global Partnership. Plans call for about \$0.5 billion of this money to be spent for comprehensive submarine dismantlement, and the rest on CW destruction. A comparison of Russian expenditures to those of other Global Partnership donor countries by priority program areas is provided in Figures 24 and 25.

#### Vladimir PUTIN, President of the Russian Federation



"Russia was invited in June [2002] to become a full member of the G8 group of the world's most highly developed nations. Together with our partners in this group we work on safeguarding our own national interests and on finding solutions to the common problems that affect all of us in the modern world. One important example of this cooperation is the Global Partnership Against the Spread of Weapons of Mass Destruction. The destruction of these weapons will help us improve the environmental situation in a number of Russian regions."

Figure 24

Russia Disbursement of Funding by Areas (billions of dollars)

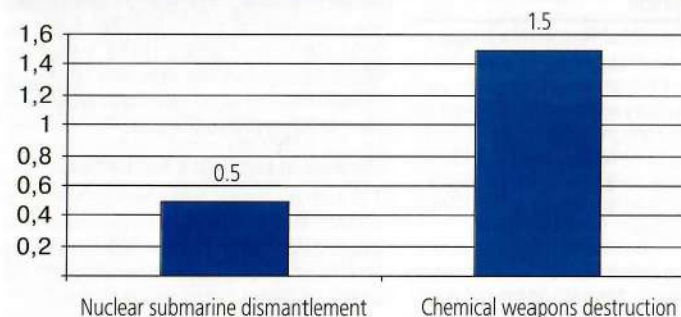


Figure 25

Comparison of Expenditures by Russia and Other Global Partnership Countries for Nuclear Submarine Dismantlement (Funds Received, 2002–2004, in millions of dollars)

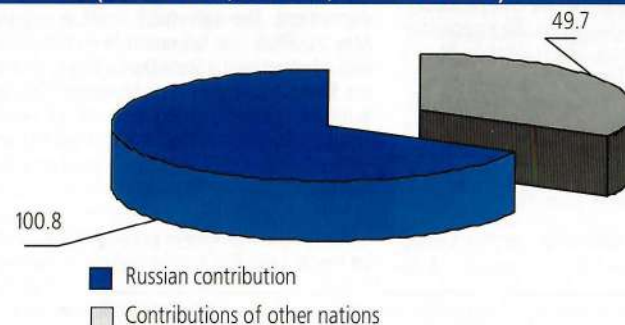
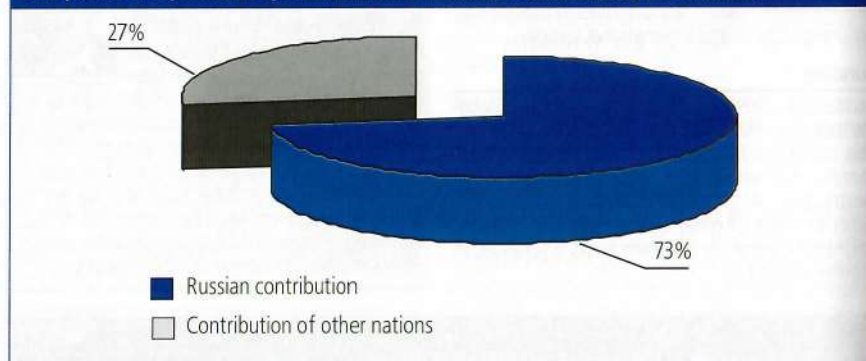




Figure 26

## Comparison of Expenditures by Russia and Other Donors for Chemical Weapons Elimination



## Program Coordination

Coordination of the Global Partnership program is accomplished via an interagency body headed by the Russian prime minister. Special divisions were created in each ministry – first and foremost the Russian Ministry of Foreign Affairs – and individuals were appointed to be responsible for and oversee work in this area. An ambassador at large was appointed in the Russian Ministry of Foreign Affairs for this purpose.

Nuclear submarine dismantlement is overseen by the Russian Federal Atomic Energy Agency. Formerly this agency was called the Ministry of Atomic Energy of the Russian Federation. Implementation of the chemical weapons destruction program is supervised by the directorate entitled the Center for Conventional Problems and Disarmament Programs, within the Federal Industry Agency. Formerly this agency was the independent Russian Munitions Agency. The realization of projects under the Second Line of Defense program is entrusted to the Federal Customs Service. The Federal Technical and Export Control Service (formerly the Ministry of Economic Development and Trade's Export Control Department) is charged with coordinating export control projects.

The importance of the Global Partnership is recognized at all levels of the Russian Government. For

instance, Russian President Vladimir Putin, at a press conference on the results of the June 11, 2004 G8 Summit at Sea Island, stated that the Global Partnership was extremely important. The Russian head of state called this program "a real plan, bringing practical results."<sup>10</sup>

## The Role of Legislative Authorities

The role of federal legislative authorities largely consists in the ratification of international agreements to which the Russian Federation is a party, and the adoption of legislation to support the realization of Global Partnership programs.

Depending on the situation ratification of international treaties can be either very fast or extremely slow. An example of quick ratification is the ratification of the Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) Agreement. The agreement itself was signed on May 21, 2003. The bill on ratifying the agreement was adopted by the State Duma (lower chamber of the Russian parliament) on November 28, 2003; it got the consent of the Council of Federation (upper chamber of the Russian parliament) on December 10, 2003 and was signed by the president on December 23, 2005. Another ratification procedure, which took less than a month, is ratification of the Agreement between the Government of the Russian Federation and the Government of

the Republic of Italy to Cooperate in the Disposition of Decommissioned Russian Nuclear Submarines, Safe Handling of Radioactive Wastes and Spent Nuclear Fuel, which took place in June 2005. At the same time there are several cases of very slow ratification. For example the bill on ratifying the ITC founding treaty has remained in the State Duma since May 30, 1995 and has yet to pass the first reading.

The State Duma leadership also greatly appreciates the importance of Global Partnership activities for Russia. For example, in December 2002, First Deputy Speaker of the State Duma Lyubov Sliska welcomed the completion of construction of the first part of the CWDF in Gornyy, Saratov region, saying that it was a "long-awaited event."



**Lyubov SLISKA, First Deputy Speaker of the Russian Federation State Duma**

"Four years after Russia ratified the Convention on the Prohibition of Chemical Weapons, a tangible, substantive step in the right direction has finally been made, and the time has come to move from declarations on disarmament to the destruction of weapons, delivering my fellow Saratov residents from this unseen threat. The meeting of all safety standards, as well as environmental and public health standards, in order to eliminate any risk for people living in the region."

## The Role of the Regions

Regional executive bodies also play an important role in the implementation of Global Partnership programs. The following example is a good illustration of this point. In 2002, Germany expressed its readiness to provide financial and technical assistance for the dismantlement of Northern Fleet submarines. However, difficulties arose that hindered the signing of an interagency agreement. In September 2003, Murmansk region Governor Yury Yevdokimov sent a letter to the Russian Prime Minister, in which he requested that he (Mikhail Kasyanov) involve himself in the solution to these problems and issue the instructions needed to clear the way for the funding that Germany had already allocated. The regional head's appeal brought support, and helped make possible the October 9, 2003 signing of an intergovernmental agreement

between Russia and Germany on implementing the Global Partnership agreement.



**Yury YEVDOKIMOV, Governor of Murmansk Region**

"If the State Duma makes the legal provisions for the activities of Western enterprises working in the area of radiation safety in Russia, Murmansk region will be able more effectively to solve the environmental problems that have been accumulating for decades in the European North."

After the signing of the MNEPR Agreement on May 21, 2003, Yevdokimov sent a letter to the State Duma requesting that the ratification process be accelerated. In his letter he emphasized that "Russia has reached the point past which further delay in solving environmental problems related to radiation is like death." In Yevdokimov's opinion, it is hard to overestimate the importance of the MNEPR Agreement as an additional tool for managing the risks associated with nuclear energy.

The Murmansk region Governor gave an example of how important the ratification of the Stockholm agreement is to northerners: in March 2003 the funds allocated by the Swedish company SIM for environmental rehabilitation in Murmansk region may not have reached Russia because of ambiguities surrounding the payment of value-added taxes (VAT).

Governor Yevdokimov recalled that Murmansk authorities had been working on formulating the MNEPR Agreement within the Barents Euro-Arctic Council (BAEC) framework since March 1999. The governments of states bordering the Kola Peninsula were engaged in working on the agreement, as well as Denmark, France, Germany, Italy, the Netherlands, Sweden, the United Kingdom, and the United States.

Primorye, in the Russian Far East, is another example. According to Primorye Governor Sergei Darkin, the territorial administration has elaborated a nine-year plan for the dismantlement of decommissioned nuclear submarines laid up in the territory's bays.

Regional legislatures also have an important role to play in the Global Partnership. Chemical weapons

<sup>10</sup> Speech by Russian President Vladimir Putin at a press conference on the results of the meeting of G8 heads of state in Sea Island, USA, June 10, 2004.



destruction facilities are located on the territory of individual regions. Their construction and operation require the passage of various legal measures to provide a social safety net for residents, to protect the environment, and to develop infrastructure in the regions where the facilities are located.

For instance, Kirov region adopted the law *On the Safety of Citizens and the Protection of the Environment of Kirov Region during the Storage, Transport, and Destruction of Chemical Weapons* (No. 144-30) on April 3, 2003.

The Tomsk city Duma provides another example of the role local legislatures can play. In 2004, it was preparing the legal basis for a referendum on the question of the construction of a MOX fuel production facility in the region.

When Global Partnership programs are implemented, in addition to the construction of industrial facilities to destroy WMD stocks and their delivery systems, the regions receive supplementary funding for public needs. For instance, in 2004, Shchuchye was able to construct a building with 48 apartments. In addition, a building with 24 apartments for medical personnel and a medical center were constructed. The construction of water pipelines, a sewage system, and treatment plants for the city has also begun. In 2004, a total of 840.2 million rubles, allocated to fulfill the federal targeted program on the destruction of Russian Federation chemical weapons stocks, were spent in Kurgan region.



**Anatoly ANTONOV, Director of the Department for Security and Disarmament Affairs, Russian Ministry of Foreign Affairs**

"The Global Partnership should raise Russia's cooperation with western countries to a qualitatively new level. It should be equitable. No one here should play starring or secondary roles."

## Results

The Global Partnership helped to accelerate the pace of chemical weapons elimination and nuclear powered submarine dismantlement in Russia. As of December 2005, the only operating CW destruction facility in Russia (Gornyy, Saratov region), which has destroyed 1,143 tons of chemical weapons was

constructed with a great deal of aid, especially from Germany. Of six future CW destruction facilities in Russia, only one will be constructed without foreign assistance. In the area of submarine dismantlement, some 25% of the 122 submarines dismantled in Russia, was scrapped with the help of foreign countries. Despite the fact that for various reasons not all donors are contributing at the promised levels to the Global Partnership, foreign aid is helping to ensure a quicker and safer reduction of the "Cold War legacy."

## Further Reading

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## Sweden



Sweden announced its participation in the Global Partnership in June 2003. It is involved in projects in the nuclear and chemical spheres. However, Sweden became engaged at an early date in improving nuclear security and safety in the former Soviet Union. Immediately after the break-up of the USSR, Sweden engaged the former Soviet states in a number of steps aimed at stabilizing and improving the nuclear safety of nuclear power plants (especially Ignalina NPP in Lithuania) and introducing nuclear materials accountability to other key countries with large nuclear resources (Ukraine and Kazakhstan). The Swedish activities were funded by the Ministry for Foreign Affairs. The

implementing agencies, since the beginning of the Swedish engagement in this field, have been the Swedish Nuclear Power Inspectorate (SKI) and the Swedish Radiation Protection Authority (SSI).

In the nonproliferation field (as opposed to nuclear safety), Sweden soon expanded its focus to include the promotion of Non-Proliferation Treaty accession and IAEA membership. Once these steps had been achieved or had enjoyed progress, the focus moved to the implementation of international safeguards in the Baltic and other former Soviet states. Sweden's early efforts largely concentrated on safeguards issues and education, as well as the promotion of direct contacts between the nuclear regulatory authorities of the former Soviet states and the IAEA. Before 1995, Sweden's outreach efforts were mainly concentrated on Kazakhstan, Ukraine, Lithuania, Estonia, and Latvia.

Cooperation with the Russian Federation was initiated in 1996. Swedish assistance to Russia initially focused on the Russian regulatory authority, Gosatomnadzor (later Rostekhnadzor), and Atomflot, the Russian nuclear-powered icebreaker fleet in Murmansk. SKI supported the development of Gosatomnadzor as an independent regulatory authority and provided various kinds of equipment and training that contributed to strengthening the regulatory functions of Gosatomnadzor/Rostekhnadzor. SKI carried out its cooperation with Atomflot together with various partners such as the Norwegian Radiation Protection Authority and the UK Department of Trade and Industry, on the basis of the March 7, 1997 Russian Government decree *On the Adoption of Regulations for the Physical Protection of Nuclear Materials, Nuclear Installations and Nuclear Material Storage Depots* as well as Russia's intergovernmental agreements with Norway, Sweden, the United Kingdom, and the United States. To date, this cooperation has encompassed the establishment of physical protection onboard four icebreakers, one vessel for the transportation of spent nuclear fuel, as well as physical protection activities at the harbor used by Atomflot. Swedish cooperation with both Rostekhnadzor and Atomflot is ongoing. In addition, SKI assisted in upgrading physical protection at Rosatom's Izotop facility for trade in civilian nuclear materials, located near St. Petersburg.

In June 2003, Sweden joined the G8 Global Partnership. Sweden takes a broad view of security and risks and, like many other states, considers it relevant to include its contributions to nuclear safety and nuclear waste management as part of its total Global Partnership contributions. Stockholm's annual contribution that is strictly earmarked for nuclear security and nonproliferation is roughly €1.7 million, while the total amount of Swedish funding for nuclear security and safety in Russia is approximately €5.1 million per year. Moreover, Sweden has committed a total sum of €16 million for 2002–2008 to the NDEP.

Sweden expanded its engagement in Northwest Russia to cover the physical protection of nuclear materials from dismantled submarines. To this effect, in 2004 a protocol was concluded by SKI and the Russian Federal Industry Agency (Rosprom) with the intention of improving physical protection at Rosprom shipyards in Murmansk and Arkhangelsk regions where nuclear-powered submarines are being dismantled under contracts from the Russian Government or from donor states. Activities aimed at protecting such nuclear materials are covered by the NDEP Strategic Master Plan.

Sweden has also been active in nonproliferation education in Russia. In cooperation with the U.S. Department of Energy and the Center for Nonproliferation Studies of the Monterey Institute of International Studies, SKI has been promoting education in the field of nuclear nonproliferation at Tomsk State University and Tomsk Polytechnical University.

In the sphere of chemical weapons destruction, the first Russian-Swedish interagency agreement on a pilot project in Russia was signed on April 29, 1993. Swedish projects in the area of chemical weapons destruction have been focused on the provision of social infrastructure near the Kambarka CWDF. By 2001, Sweden had spent a total of SEK 5.7 million (about \$650,000) on a risk assessment project, establishing a public communications center, and providing medical equipment. In 2003, only \$9,000 was spent, as Sweden and Russia explored possible new projects. In 2004, Sweden also pursued the possibility of implementing a project within the framework of the European Union Joint Action in support of CW destruction in Russia. For 2005–2006, a total of SEK 2.3 million (about



Table 46  
Sweden: Disbursement of Funding in the Nuclear Sphere by Project

Project	Funding	Implementation Period	Responsible Party (contractor)
Physical protection of Russian nuclear icebreakers ( <i>Sovetskiy Soyuz, Sevmorput, Arktika, Yamal</i> )	\$650,000	2000–2003	Atomflot – Swedish Ministry of Foreign Affairs
Physical security at Nerpa Shipyard	\$350,000	2002–2004	Rosatom – Swedish Ministry of Foreign Affairs
SRW treatment	\$422,000	2003–2004	Rosatom – Swedish Ministry of Foreign Affairs
Informational support for measures to improve nuclear and radiation security on the Kola Peninsula	\$84,000	2003–2004	Rosatom – Swedish Ministry of Foreign Affairs
NDEP	€16 million	2002–2008	–

\$300,000) is being contributed to the public outreach activities of the Green Cross. In 2005, Sweden also decided to contribute SEK 5.5 million (about \$700,000) to the British-led infrastructure projects at the Shchuchye CWDF.

### Regulatory Framework

*Contract between Swedish International Project on Nuclear Safety (SIP), the Murmansk region government, and SevRAO on research in how best to handle and store SRW at Andreyeva Bay.*

The contract was signed by the Swedish International Project on Nuclear Safety, the Murmansk region government, and SevRAO, representing the Russian Ministry of Atomic Energy. In accord with the agreement, Sweden spent \$422,000 on projects related to the handling of radioactive wastes in Murmansk region.

### Results

At present, SRW storage depots in Northwest Russia are at capacity. Much of the SRW is in substandard storage, where it is not protected from precipitation or equipped with systems to divert water from precipitation. In addition, there are a range of problems associated with a shortage of vehicles to transport

SRW for treatment. A more permanent solution awaits a Russian decision on the location of a long-term interim storage site in Northwest Russia.

In the meanwhile, Sweden is funding a study of the condition of radioactive waste currently in storage. The study costs \$422,000. In addition, a contract was signed in Stockholm on the provision of \$84,000 in Swedish assistance for informational support for measures to improve nuclear and radiation security on the Kola Peninsula. Sweden was the first to take part in bilateral cooperation in the treatment of radioactive waste in Russian Northwest.

### Further Reading

Anna Abayeva, "Russia and Scandinavia – an Extension of the Global Partnership," *Yaderny Kontrol* No. 1 (Spring), 2004, pp. 107–130.

Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003), vol. 3, pp. 167–184.



### Switzerland

Switzerland joined the Global Partnership in May 2003, on the eve of the G8 Summit in Evian. Nearly all Swiss assistance under the Global Partnership is being directed to chemical disarmament. On March 3, 2003, the Council of States (the upper house of the Swiss parliament) unanimously voted to allocate 17 million Swiss francs (about \$13.7 million) to help Russia destroy chemical weapons. A corresponding decision by the Swiss government in December 2002 was supported by parliament's lower house, the National Council. According to Swiss law, all assistance moneys provided to Russia under the Global Partnership must be exclusively provided for projects in the realm of chemical weapons destruction.

On January 28, 2004, a framework agreement on cooperation in the destruction of chemical weapons was signed in Moscow by Anne Bauty, chargé d'affaires at the Swiss Embassy, and Viktor Kholstov, General Director of the Russian Munitions Agency. Under the agreement, Switzerland plans to spend up to 15 million Swiss francs (approximately \$12 million) for chemical weapons destruction in Russia over the course of five years. The first stage of cooperation under this agreement is the creation of a sanitary and hygiene monitoring system in Shchuchye. The Swiss government intends to allocate CHF780,000 (over \$610,000) for the project; CHF585,000 (over \$462,000) had been expended as of June 2005.

Among other projects is the delivery of equipment for the reconstruction of an existing electrical substation in Kambarka. An implementation agreement was signed on November 26, 2004. Project costs are approximately €1.6 million. In August 2005, the third implementation agreement was signed according to which Switzerland will allocate €1.6 million for the equipment for the construction of an electrical substation in Kambarka (not the same substation as the one subject to the November 2004 Agreement). This project should be implemented by the end of 2006. In addition, Switzerland is financing Green Cross offices in Kirov, Penza, and Pochev to educate the public about chemical weapons elimination issues, and co-finances the annual Green Cross National Forum in Moscow (a total of CHF 3.5 million was spent through 2005; annual financing is now CHF252,000).

### Future Prospects for Cooperation

On November 26, 2004, in the presence of the two countries' Ministers of Foreign Affairs, Sergei Lavrov and Micheline Calmy-Rey, an implementing agreement on funding the reconstruction of an electrical substation in Kambarka and a sanitary and hygiene monitoring system at Shchuchye was signed, opening the door to the use of funds Switzerland had pledged for chemical weapons elimination in Russia.

In 2005–2008, Switzerland plans to concentrate on the construction of electrical substations for the

Table 47  
Swiss Project Funding (in Swiss francs)

Project	Pledges, June 2002–June 2005	Funds Expended, June 2002 – June 2005
Sanitary and hygiene monitoring system, Shchuchye	780,000	585,000
Electrical substation reconstruction, Kambarka	2,500,000	1,875,000
Electrical substation construction, Kambarka	2,400,000	–
Green Cross offices, National Forum	864,000	864,000
<b>Total</b>	<b>6,544,000</b>	<b>3,324,000</b>



destruction facilities in Kambarka, Maradykovskiy, Leonidovka, and Pochev. Thus, taking its past experience at Shchuchye into account, Switzerland plans to contribute to the creation of five of the seven planned CWDF in Russia.



**Jean-Jacques de DARDEL, Head of the Center for International Security Policy, Swiss Federal Department of Foreign Affairs, 2001–2004**

"[One of Switzerland's] motive[s] for this focus on chemical disarmament is that Switzerland, which is not quite a superpower, has chosen to concentrate its efforts in order to secure the effectiveness of its actions."

Switzerland is not completely inactive in the nuclear area: in February 2005, at the request of the United States, it hosted an international conference on international participation in the U.S. Department of Energy Elimination of Weapons Grade Plutonium Production Program.

#### Further Reading

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#### United Kingdom

At the G8 Summit in June 2002 in Kananaskis, the United Kingdom announced that it would contribute up to \$750 million to the Global Partnership over ten years. The United Kingdom plans to allocate these funds to assist in the elimination of chemical weapons, the dismantlement of nuclear-powered submarines, the disposition of weapons-grade plutonium, the employment of weapons scientists, nuclear safety and security, the decommissioning of nuclear reactors, and nuclear materials control and accounting. UK has pledged to spend up to \$650 million on the nuclear component of its Global Partnership assistance to Russia. British priorities in this area are:

- spent nuclear fuel management in Northwest Russia, to keep nuclear materials safe and secure. The main projects in this field are construction of a storage facility for SNF at Atomflot in Murmansk, SNF management and nuclear clean up at Andreyeva Bay, and dismantling of decommissioned nuclear submarines (three have been already been cut);
- enhancing physical protection of nuclear materials at research institutions. Legal arrangements have been negotiated in 2004–2005 and first projects started;
- UK-Russia Closed Nuclear Cities Partnership: providing alternative employment for former nuclear weapons specialists in closed nuclear cities. Successful projects are underway in Snezhinsk, Sarov, Seversk, Zheleznogorsk and Ozersk;
- elimination of Weapons Grade Producing Plutonium Reactor Program: contributing to shutting down of plutonium production reactors. This program is yet to be started.

The United Kingdom has been cooperating with Russia to eliminate its "Cold War legacy" for more than ten years. London's participation in cooperative threat reduction projects began with its support of the Nunn-Lugar Program and the signing of a memorandum of understanding between Russia and the United Kingdom in November 1992 on the provision of supercontainers and vehicles to help transport nuclear weapons from other CIS states to Russia.

#### Regulatory Framework

As of the end of 2005, the legal basis for UK-Russian cooperation under the Global Partnership included the following bilateral and multilateral agreements and funding mechanisms:

- Agreement between the Government of the Russian Federation and the Government of the United Kingdom of Great Britain and Northern Ireland on Provision by the United Kingdom of Assistance for the Implementation of the Convention on the Prohibition of Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction in the Russian Federation, done at London on December 20, 2001;
- Agreement between the Government of the Russian Federation and the Government of the

**Table 48**  
United Kingdom: Distribution of Funding by Area (millions of pounds sterling)

Program	2001–2002	2002–2003	2003–2004	2004–2005
Nuclear Materials Accountancy	0.04	0.01	0.00	0.03
Nuclear Safety Program	1.84	2.59	1.97	5.51
Physical Protection of Proliferation Sensitive Nuclear Materials	0.29	0.63	0.59	0.61
Closed Nuclear Cities Partnership	0.00	0.70	1.96	3.95
Submarine Dismantlement and SNF management*	0.08	0.63	16.55**	20.2
Chemical Weapons Destruction***	0.11	2.70	2.92	4.62
<b>Total</b>	<b>2.36</b>	<b>7.26</b>	<b>23.99</b>	<b>35.72****</b>

\* Includes work at Andreyeva Bay, a former onshore Navy base and Atomflot storage facility.

\*\* Includes £10 million contribution to the EBRD's Northern Dimension Environmental Project (NDEP) in 2003–2004.

\*\*\* Includes expenditure of some £450,000 on redirection of scientists in the biological area.

\*\*\*\* The United Kingdom also spent £1.05 million on work in Kazakhstan and addressing the social consequences of nuclear power plant closure.

United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy of September 3, 1996;

- Memorandum of Understanding between the Russian Federation Federal Atomic Energy Agency and the UK Department of Trade and Industry on the UK-Russia Closed Nuclear Cities Partnership (CNCP) of November 4, 2004;
- Northern Dimension Environmental Partnership (NDEP) under the European Bank for Reconstruction and Development (EBRD);
- Arctic Military Environmental Cooperation (AMEC), a U.S.-Norwegian-Russian cooperative program joined by the United Kingdom in 2003;
- The Technical Assistance to the CIS (TACIS) program, under the European Union.

The United Kingdom signed the Multilateral Nuclear Environmental Program in the Russian

Federation (MNEPR) Agreement and the Protocol on Claims, Legal Proceedings and Indemnification.

During Russian President Vladimir Putin's state visit to London on July 24, 2003, the Supplementary Agreement to the Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Russian Federation on Cooperation in the Peaceful Uses of Nuclear Energy of 3 September 1996 was signed. The Supplementary Agreement is directed at funding the safe dismantlement of nuclear-powered submarines. This document was the logical extension of UK-Russian cooperation begun earlier.

Table 48 shows the distribution by area of the UK assistance from 2001 to 2005.



At the end of the last financial year, UK assistance for chemical weapons disarmament totaled £10.35 million. The distribution of this funding can be seen in Table 49.

Table 49

United Kingdom: CW Elimination Funding by Project (millions of pounds sterling)				
Project	2001–2002	2002–2003	2003–2004	2004–2005
Chemical Weapons elimination projects at Shchuchye (including project management costs)	–	2.25	2.15	3.64
Support to Green Cross Public Outreach Office, oKizner and ther projects	–	0.07	0.05	0.06
UK Ministry of Defense Project Management and Support	0.11	0.36	0.52	0.68
<b>Total</b>	<b>0.11</b>	<b>2.68</b>	<b>2.72</b>	<b>4.38</b>



**Adam INGRAM, United Kingdom Minister for the Armed Forces**

"The UK expects to have spent some £15 million on assisting the Russian CW destruction program by the end of the 2004 financial year and to spend a further £10 million in the next financial year."

It is noteworthy that several other countries are contributing funding through the UK program to suppose the creation of a CWDF in Shchuchye, making the program truly international. For example:

- procurement of equipment for electric power supply has been funded jointly by the United Kingdom, Norway, the EU and the Czech Republic, while an additional electricity substation is being refurbished with funds from New Zealand;
- construction of an 18-kilometer railway spur from the CW storage site to the Shchuchye CWDF is being implemented by the United Kingdom with Canadian funds (C\$33 million), with a U.S. nongovernmental organization, the Nuclear Threat Initiative, contributing US \$1 million for the railroad bridge; and

- main process equipment for chemical weapons destruction will be acquired using the combined contributions of Canada and the Netherlands, as well as the United Kingdom itself.

At the same time the United Kingdom itself contributes through other donors. A very illustrative example here is collaboration with the U.S. Department of Energy under the Memorandum of Understanding signed in January 2005 to assist Russia in closing its weapons grade plutonium producing reactors by 2009. The £12 million UK contribution to this \$500 million project has enabled this U.S. led project to stay on track and encourage other international donor aid.

**Ian DOWNING, Director for International Nuclear Policy and Programs, Department of Trade and Industry**



"We have already been working with you [Rosatom] for a fairly long time, and when it comes to the "nuclear cities," we understand that this is a complicated and sensitive area in which it is fairly difficult to work. Therefore mutual understanding and coordinated steps in restricting the spread of WMD are so important."

Table 50

Planned Funding of UK-Russian Projects in Northwest Russia				
Project	Funding	Implementation Period	Responsible Party (contractor)	
			Russia	United Kingdom
Characterization of former SNF wet storage facility (Building 5), Andreyeva Bay	£246,000	2003–06	Rosatom (International Center for Environmental Safety)	DTI (RWE Nukem)
SNF management options study, Andreyeva Bay	£451,000	2002–05	Rosatom (R&D Institute of Power Engineering – NIKIET)	DTI (RWE Nukem)
Establishment of safe conditions for interim storage and management of dry storage tanks, Andreyeva Bay	£733,000	2002–05	Rosatom (SevRAO)	DTI (RWE Nukem)
Radiation protection, Andreyeva Bay	£1.6 million	2003–05	Rosatom (SevRAO)	DTI (RWE Nukem)
Integrated Database, Andreyeva Bay	£59,000	2004–05	Rosatom (ICES)	DTI (RWE Nukem)
OBIN (feasibility study), Andreyeva Bay	£1.3m	2005–07	Rosatom (SevRAO)	DTI (RWE Nukem)
Interim SNF storage facility, Atomflot	£15.5 million	2003–06	Rosatom (Murmansk Shipping Co.)	DTI (Crown Agents)
Dismantlement of two Oscar-class submarines	£11.5 million	2003–04	Rosatom (Zvezdochka Shipyard)	DTI (RWE Nukem)
Dismantlement of one Victor III-class submarine	£3.6 million	2005–06	Rosatom (Nerpa Shipyard)	DTI (RWE Nukem)
Development of buoyancy and safe towing technology for decommissioned submarines (AMEC project)	£950,000	2005–06	Rosatom (Terna SB Ltd, Moscow)	DTI (RWE Nukem)
NDEP	£10 million	2003–04	Rosatom (R&D Institute of Power Engineering – NIKIET)	EBRD (NNS)



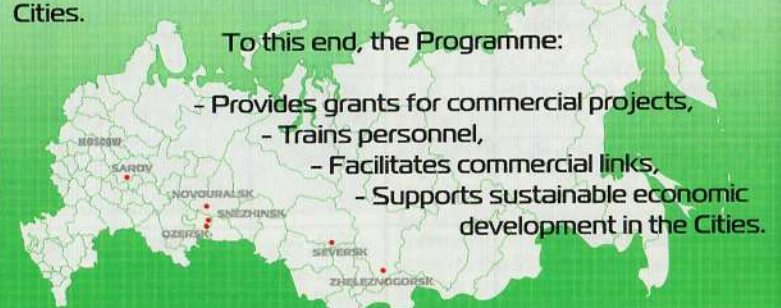
## UK-Russia Closed Nuclear Cities Partnership (CNCP)



The Closed Nuclear Cities Partnership Programme is part of the G-8 Global Partnership. It aims to limit the spread of weapons of mass destruction by providing sustainable civil sector jobs for former Russian nuclear weapons scientists and engineers facing redundancy in the Russian Closed Nuclear Cities.

To this end, the Programme:

- Provides grants for commercial projects,
- Trains personnel,
- Facilitates commercial links,
- Supports sustainable economic development in the Cities.



HTSPE Moscow Office  
17 Skakovaya str., 2407, Moscow, Russia  
Phone/Fax: 7095-945-5163/2625, e-mail: cncp@cncp.ru, <http://www.cncp.ru>



Table 51

The UK Funding for the Selected Global Partnership Projects (in millions of pounds)

Program Area	2001-02 Expenditures */**	2002-03 Expenditures */**	2003-04 Expenditures */**	2004-05 Expenditures */**
Chernobyl Shelter Project***	7.88	4.04	14.13	0.16
Plutonium Disposition in Russia****	0.00	0.00	0.00	0.01
Nuclear Materials Accountancy	0.04	0.01	0.00	0.03
Nuclear Safety Program	1.84	2.59	1.98	5.61
Physical Protection of Proliferation of Sensitive Nuclear Materials	0.29	0.63	0.58	0.64
Decommissioning in CEE/FSU***	2.86	0.00	5.00	0.00
Closed Nuclear Cities Partnership	0.00	0.70	1.96	4.10
NW Russia*****	0.08	0.64	16.52	20.10
Social and Economic Consequences of Nuclear Power Plant Closure	0.13	0.30	1.11	1.23
Information Dissemination and Program Publicity	0.00	0.05	0.05	0.02
Plutonium Reactor Closure Project*****	0.00	0.00	0.00	2.55
<b>Total</b>	<b>13.12</b>	<b>8.96</b>	<b>41.33</b>	<b>34.45</b>
<b>Grand Total*****</b>	<b>15.18</b>	<b>11.46</b>	<b>41.80</b>	<b>35.18</b>

\* The costs include those of the project consultants (HTSPE, BNG, RWE NUKEM Ltd and Crown Agents) contracted by DTI to establish and monitor the projects and Programs. Given the nature of projects and associated risks, substantial effort has been made to establish robust project management structures for this complex Program.

\*\* The figures exclude the staff costs of the DTI team directing the Program (£0.725 million for 2005-2006) but include costs of locally engaged members of staff in the British Embassy Moscow and the Consulate General in St. Petersburg.

\*\*\* Includes additional 2003-2004 UK contributions to the EBRD managed accounts for the Chernobyl Shelter Fund (CSF) and NSA for projects related to radioactive waste management activities at Chernobyl. £10 million and £5 million respectively.

\*\*\*\* Expenditure on Plutonium Disposition and related work on International Verification of Excess Weapons Material depends on the completion of an agreement between the Russian Federation and the US.

\*\*\*\*\* Expenditure includes a 2003-2004 £10 million contribution to the NDEP Fund for nuclear safety projects in NW Russia. This international fund is managed by EBRD.

\*\*\*\*\* Expenditure for UK contribution to US-led project related to the irreversible shutdown of two plutonium-producing reactors in Seversk and Zheleznogorsk.

\*\*\*\*\* This sum is higher than a simple sum of the 11 lines above as the UK includes in the Global Partnership funding its funding for International Verification of Excess Weapons Material, KEDO, and Decommissioning of the BN-350 Reactor in Kazakhstan.



Table 52

## UK-Russian Cooperation: Achievements

Project	Year	Result
Nuclear Materials Accountancy	1992–1993	Conducted several conferences and seminars
Nuclear Safety Program	1999–2003	Several projects at NPPs under TACIS
Physical Protection of Nuclear Munitions	1994	Supply of supercontainers and vehicles for nuclear weapons transport
Closed Nuclear Cities Partnership	2005	A total of 22 projects in five Russian cities (Snezhinsk, Sarov, Seversk, Zheleznogorsk and Ozersk) are underway, with a further 19 projects under preparation. So far 201 jobs, respectively, have been created.
Submarine Dismantlement in Russian Northwest	2005	Completion of two nuclear submarine dismantling projects to time (early 2005) and cost of two Oscar class submarines at Zvezdochka shipyard. A third project to dismantle a Victor III nuclear submarine at Nerpa shipyard is underway and some 2 months ahead of schedule (to be completed in early 2006).
Andreyeva Bay SNF Storage Facility	2005	Implementation of a £1.3 million major engineering study led by the UK to secure some 20,000 SNF assemblies.
Atomflot SNF Storage Facility	2005	Completion of the major phases to time and cost of the £15 million SNF storage facility at the Atomflot site in Murmansk.
Chemical Weapons Destruction	2003	Completion of a water supply system at the Shchuchye CWDF
Chemical Weapons Destruction	2004–2005	Procurement of equipment for electricity substation supplying power to Shchuchye CWDF

## Results and Future Prospects

The areas of UK-Russian cooperation under the Global Partnership correspond to Russia's own priorities. Concrete practical results have been achieved in each of these areas. For Russia, it has been very important that 80% of the funds allocated by the United Kingdom are being spent in Russia itself.

In general, both parties are satisfied with the course of cooperation. The prospects for UK-Russian cooperation under the Global Partnership appear favorable.

## Further Reading

*The G8 Global Partnership: Progress during 2004 on the UK's Programmes to Address Nuclear, Chemical and Biological Legacies in the Former Soviet Union* (Second Annual Report, 2004), available on the UK Department of Trade and Industry Website, <http://www.dti.gov.uk>  
 Anna Shuvalova, "Cooperation between Russia and the United Kingdom under the Global Partnership," *Yaderny Kontrol* No. 3 (Fall) 2004, pp. 125–46.



## United States

Bilateral U.S.-Russian cooperation in the destruction of surplus armaments started long before the June 27, 2002 establishment of the Global Partnership. Cooperation in this area began in the early 1990s, when U.S. Senator Sam Nunn initiated the Cooperative Threat Reduction (CTR) program. His idea was supported by U.S. Senator Richard Lugar and the first President George Bush, and on December 12, 1991 the *Soviet Nuclear Threat Reduction Act*, which authorized \$400 million in funding, was passed. In 1993, this law was superceded by a new one: the *Cooperative Threat Reduction Act*, which was realized in the fiscal year 1994 budget. The new law provided more details on the assistance programs and added a provision for assistance in CW elimination. The main areas of assistance to Russia under CTR are:

- elimination of strategic nuclear weapons;
- creation of infrastructure for the environmentally safe elimination of weapons, including building and/or equipping facilities for the destruction of missiles, liquid and solid fuel, warheads, and ballistic missile submarines;
- safe and secure storage, transport, and accounting of nuclear weapons and fissile materials;
- environmentally responsible disposition of wastes;
- creation of an export control system; and
- "brain drain" prevention.

Initially, assistance was provided in the form of equipment, but gradually this was supplanted by the provision of services and through direct contracts. The coordination of activities was largely entrusted to private U.S. companies. The U.S. Department of Defense (DoD) or Department of Energy (DoE) holds a tender in the United States to find a general contractor – a U.S. company able to effectively implement a particular project. Next, the U.S. DoD or DoE, the general contractor, and the Russian Ministry of Economic Development and Trade hold a new tender to choose a Russian subcontractor with the relevant experience. This

subcontractor, in turn, employs the organization actually performing the activity, as a rule one of the organizations located near the facility site that is involved in the work or construction of such facilities and has the capabilities needed to perform the complex technological tasks required for the project. The United States pays contractors and subcontractors the actual costs of performing the work.

Beginning in 1992, about ten large corporations were active at Russian nuclear and chemical facilities. These corporations are the most highly respected representatives of the US military-industrial complex. They include Bechtel, Boeing, Washington Group, Westinghouse, Lockheed Martin, Parsons, Raytheon, and Thiokol.

After the events of September 11, 2001, the U.S. Congress authorized an additional \$5 billion for Cooperative Threat Reduction projects in the former Soviet Union. In order to use these funds as effectively as possible, the U.S. Defense Threat Reduction Agency introduced Cooperative Threat Reduction Integrating Contracts (CTRIC), choosing five prime contractors to perform the majority of CTR activities: Bechtel, Washington Group, Parsons, Raytheon, and Kellogg, Brown & Root (a division of Halliburton).<sup>11</sup> Four of them work in the area of strategic weapons elimination and chemical weapons destruction. Raytheon became the main integrating contractor, specializing in logistics. In addition, in 2002 Washington Group and Raytheon won a tender to become integrating contractors for the DoE's plutonium production shutdown project as well.<sup>12</sup>

The Cooperative Threat Reduction program has made it possible for Russia to meet its international obligations and reduce strategic nuclear weapons as shown in Figure 27.

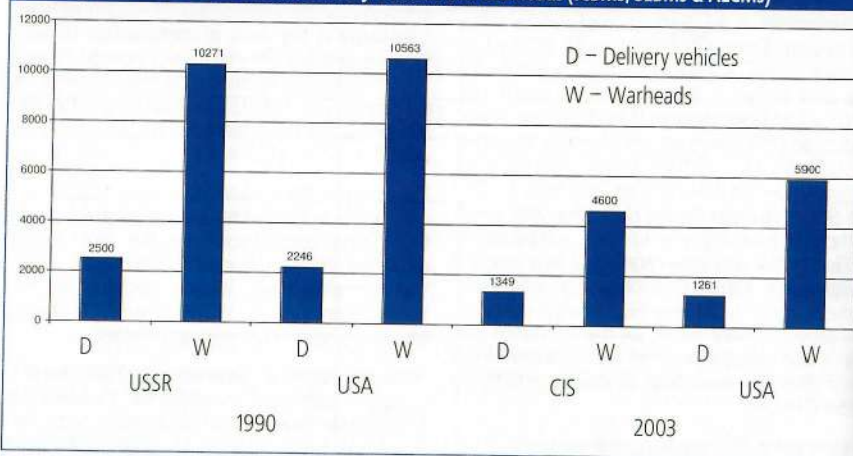
In total, the U.S. Congress allocated over \$7 billion for the Cooperative Threat Reduction and Global Partnership programs from 1992 through 2005. During this period, 6,760 warheads were eliminated (the warheads themselves dismantled and the fissile materials put into storage). The United States helped with the destruction of 590 ICBMs,

<sup>11</sup> CTRIC Website, <http://ctric.dtra.saic-trsc.com>

<sup>12</sup> [http://www.nnsa.doe.gov/docs/2003-05-27-R-03-113\\_052703russiannuclearpower.html](http://www.nnsa.doe.gov/docs/2003-05-27-R-03-113_052703russiannuclearpower.html)



**Figure 27**  
A Comparison of U.S. and Russian Delivery Vehicles and Warheads (ICBMs, SLBMs & ALCMs)



516 launchers and silos, 150 heavy bombers, 28 SSBNs and 549 SLBMs.



**Alexander VERSHBOW,**  
U.S. Ambassador to the Russian  
Federation, 2001–2005

"Our joint project, the Global Partnership, is a major milestone in post-Cold-War efforts to stop proliferation. Twelve years ago, Nunn-Lugar, or the Cooperative Threat Reduction (CTR) initiative, redefined the relationship between the great powers and set us on a new course, leaving behind our destructive antagonism in exchange for a collective approach to reducing a common threat. Today, our multi-national partnership expands and intensifies that commitment."

### Regulatory Framework

The Nunn-Lugar Program is implemented through bilateral agreements concluded between the United States and the CIS states. The Agreement

Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation, which had a term of seven years, was signed on June 17, 1992.<sup>13</sup>

On June 15–16, 1999, a special protocol was concluded extending the term of the agreement for another seven years.<sup>14</sup> The agreement is an "umbrella" under which additional separate inter-agency agreements are to be concluded to cover the implementation of particular activities. The regulatory framework for U.S.-Russian cooperation is based on the following documents:

- Treaty between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms (START Treaty);
- Protocol on the Joint Compliance and Inspection Commission relating to the Treaty between the United States of America and the Union of

### Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation, Washington, June 17, 1992 (excerpts)

**1.** The Parties shall cooperate in order to assist the Russian Federation in achieving the following objectives:

- the destruction of nuclear, chemical and other weapons;
- the safe and secure transportation and storage of such weapons in connection with their destruction; and
- the establishment of additional verifiable measures against the proliferation of such weapons that pose a risk of proliferation.

**2.** The Parties, through their Executive Agents, shall enter into implementing agreements as appropriate to accomplish the objectives set forth in Article I of this Agreement.

**3.** Each Party shall designate an Executive Agent to implement this Agreement.

- For the USA, the Department of Defense.
- For Russia, with respect to nuclear weapons, the Ministry of Atomic Energy.

**4.** The terms of this Agreement shall apply to all material, training, or services provided in accordance with this Agreement or implementing agreements, and to all related activities and personnel.

**5.** Aircraft and vessels ... used by the United States of America in connection with activities pursuant to this Agreement in the Russian Federation shall, in accordance with international law, be free of customs inspections, customs charges, landing fees,

navigation charges, port charges, tolls, and any other charges by the Russian Federation, or any of its instrumentalities.

**6.** ...the Russian Federation shall not ... permit the use of [any material, training or services provided pursuant to this Agreement] for purposes other than those for which it has been furnished.

**7.** Claims by third parties, arising out of the acts or omissions of any employees of the United States of America or contractors or contractors' personnel of the United States of America done in the performance of official duty, shall be the responsibility of the Russian Federation.

**8.** The United States of America ... may import into, and export out of, the Russian Federation any equipment, supplies, material or services required to implement this Agreement. Such importation and exportation of articles and services shall not be subject to any license, other restrictions, customs, duties, taxes or any other charges or inspections by the Russian Federation or any other of its instrumentalities.

**9.** Upon request, representatives of the Government of the United States of America shall have the right to examine the use of any material, training or other services provided in accordance with this Agreement, if possible at sites of their location and use ... during the period of this Agreement and for three years thereafter.

**10.** This Agreement shall ... remain in force for seven years.

Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms;

- START Treaty Memorandum of Understanding Data for the Russian Federation;
- Treaty between the United States of America and the Russian Federation on Strategic Offensive Reductions, May 24, 2002;
- Agreement between the Department of Defense of the United States of America and the Committee for Defense Industry of the Russian Federation Concerning Cooperation in the Elimination of Strategic Offensive Arms, origi-

nally signed on August 26, 1993, amended April 11, 1997, and June 9, 1998;

- Russian Government Decree No. 672, of June 23, 1999, On the Approval and Presentation to the Russian Federation President of a Proposal to Sign the *Protocol to the Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation*;
- Russian Government order *On Issues Related to*

<sup>13</sup> Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation, in *Nuclear Nonproliferation*, vol. 2 (Moscow: PIR Center, 2002), p. 424.

<sup>14</sup> Protocol to the Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation, in *Nuclear Nonproliferation*, vol. 2 (Moscow: PIR Center, 2002), p. 428.



**Protocol to the Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation, Moscow, Washington, July 15–16, 1999 (summarized excerpts)**

1. For the Russian Federation, the Executive Agents are:

- a) with respect to nuclear weapons, the Ministry of Atomic Energy and the Ministry of Defense;
- b) with respect to the elimination of strategic offensive weapons and chemical weapon production facilities, the Ministry of Economy; and

c) with respect to the elimination of chemical weapons stockpiles, the Ministry of Defense.

2. Goods or services imported or exported for projects pursuant to this Agreement shall be free of licensing and other analogous levies, but not from export control procedures.

3. This Agreement shall remain in force for a period of seven years.

*the Reduction and Elimination of Strategic Offensive Arms and Conditions;*

- Framework Agreement between the Russian Federation Ministry of Defense and the United States on Cooperation in the Fulfillment of the Treaties, Protocol, and Agreements on the Reduction and Limitation of Strategic Offensive Arms.

**Results**

Russia's obligations under the START treaty required the prompt construction of infrastructure for the safe withdrawal of missile systems from active inventory, and the secure storage of the fissile material removed from missile warheads. The construction of a fissile material storage facility (FMSF) deserves emphasis as one of the great achievements of the U.S. assistance program in Russia. Initially, the building was supposed to be built in Seversk, but eventually the decision was made to build in at the Mayak Combine in Ozersk (Chelyabinsk-65).

The first phase of construction – clearing the foundation – was funded by Russia and took place between the fall of 1994 and the fall of 1996. Subsequently, in March 1996, Bechtel was chosen to be the general contractor by the U.S. Defense Threat Reduction Agency. Bechtel coordinated the second stage of construction – laying the foundation and building the walls for one storage wing (October 1996 – fall 2000). In December 2003, the wing was completed, and declared operational. It is designed to store 400 tons of uranium and plutonium (25,000 containers) for no less than 100 years.

Construction of the facility cost a total of \$413 million; in addition, 20 ancillary buildings were built

(administrative buildings, guardhouses, etc.) This FMSF is the largest fissile material storage facility in the world.

**Condoleezza RICE,  
U.S. Secretary of State**

"We are speeding up the securing of nuclear materials in order to do it in four years instead of 13."



**Further Reading**

Vladimir Orlov, Roland Timerbayev, and Anton Khlopkov, *Nuclear Nonproliferation Issues in Russian-American Relations: History, Possibilities, and Prospects for Future Cooperation* (Moscow: PIR Center, 2001), pp. 176–199.

Roman Popov, "The Role of U.S. Business in Implementing the Cooperative Threat Reduction Program," *Yaderny Kontrol* No. 2 (Summer), 2004, pp. 21–44.

Yury Fedorov, ed. "Cooperation in the Name of Global Security," *PIR Center Study Papers* No. 19, 2002.

Michael A. Guhin, "Remarks at the Inter-Parliamentary Conference in Strasbourg," November 21, 2003. Available at [http://www.sgpproject.org/events/2003\\_Nov\\_Strasbourg.html](http://www.sgpproject.org/events/2003_Nov_Strasbourg.html)

William Hoehn, "Update on Congressional Activity Affecting International Threat Reduction and Cooperative Nonproliferation Programs," *RANSAC Policy Update*, August 2005.

Ivan Safranchuk, ed. "The Cooperative Threat Reduction Program: Analyzing Effectiveness and Future Development," *PIR Study Papers* No. 13, 1999.

## Part 5. PROSPECTS FOR FUTURE COOPERATION

Despite the initial successes of the Global Partnership, which mostly came in the form of pledges from participating states, and the start of new project implementation, in order to be truly effective the partnership will have to take several more steps.

**Fulfilling Political Promises to Fund Global Partnership Programs and Raising the Political Status of the Global Partnership**

The first three years of the Global Partnership have shown that some partners are not consistent in word and deed. After declaring significant pledges to the Global Partnership, few concrete steps followed. For instance, France promised €750 million

for the Global Partnership, but has yet to expend real sums on the program. Another example is the European Union – despite its pledge of €1 billion, it will really only be able to begin fully acting on this promise after the beginning of the new EU budget cycle in 2007.

An additional problem is that fact that the legislatures of several countries are not well-informed about related programs (and it is the legislatures that must make the budget decisions that fund Global Partnership projects). It is critical that efforts to inform the media and the general public about the implementation of the Global Partnership, as well as existing problems and prospects for future cooperation, be strengthened.

**The 2006 G8 Summit**

Beginning January 1, 2006, Russia will hold the presidency of the G8. Earlier, in 1996, Russia welcomed a summit dedicated to nuclear security issues, but the first time it will lead a G8 Summit as a full-fledged

member is in 2006. The upcoming summit in St. Petersburg provides a good opportunity to sum up the program's interim results and to raise the Global Partnership's status.

**Increasing Global Partnership Project Funding**

Global Partnership funding may be increased in two ways: by increasing the pledges of current partners and by bringing new countries into the partnership. An alternative method is through debt exchange: Russian debt might be forgiven in exchange for more Global Partnership funding from the Russian budget.

Several nongovernmental organizations have come forward to argue that the \$20 billion promised in Kananaskis should be a floor, not a ceiling, representing the minimum amount of assistance provided to Russia. However, not all of the partner countries have embraced this initiative.

The idea of debt exchange is mentioned in the Kananaskis documents. Russia's debt to the European Union and Japan totaled \$41 billion in 2003; \$33 billion of this amount is debt inherited from the Soviet Union. The concept of debt exchange has made no progress in bilateral discussions. In particular, Germany, Russia's largest cred-

itor, is not interested in the idea. On the other hand, Italy, to which Russia owes \$5 billion, and the United States (\$2.7 billion) have shown some interest in it.

**Concentrating on Priority Areas**

Among the areas of cooperation under the Global Partnership, submarine dismantlement and chemical weapons destruction are clearly priorities. This is justified by the magnitude of the problems that must be solved in these areas and the urgency of the measures required needed for their successful resolution.

The prioritization of these areas, which has been declared by Russia, has not been equally accepted by all partners. For instance, the United Kingdom believes that the success of the partnership depends on assisting Russia in those areas that it deems important. As a result of this approach, British-Russian cooperation under the Global Partnership has developed quickly, and is already yielding results both in the area of nuclear subma-



rine dismantlement and in the area of chemical weapons elimination.

In contrast, several other countries have offered to cooperate in other areas. For instance, throughout 2003 France insisted on the importance of working on biosecurity, and did not agree with the prioritization set by Russia. As a result, the prospects for cooperating with France in chemical disarmament and submarine dismantlement remained unclear until quite recently, when Paris began to take steps to begin projects in the latter area. However, for the first two full years of the partnership, France did not expend any moneys on either of Russia's top two priorities.

Another example is cooperation on the part of several European countries and the European Union aimed at improving the safe operation of functioning nuclear facilities (NPPs most of all). Despite the fact that this is not directly related to WMD nonproliferation and the fight against international terrorism, and therefore cannot be considered as a Global Partnership priority, these donors are not in a hurry to reconsider their assistance programs or to increase their financing of nonproliferation projects.

### Possible New Areas of Cooperation and Expanding the Geographic Reach of the Global Partnership

Biosafety and biosecurity, as well as the securing of radioactive sources, mentioned at the Evian Summit, have to be considered as possible new areas of Global Partnership cooperation. These problems are made all the more urgent by the recent threat of the terrorist use of WMD.

At the same time, the funding of projects in new areas should not be allowed to "erode" the amount of financing flowing to the main Global Partnership priorities that were established in the Kananaskis documents.

One more item on the current agenda is the question of additional countries joining the Global Partnership both as donor, and as recipient states. One can only welcome the addition of new countries to the Global Partnership. However, one should note that possible new donor states (most of which are likely to be relatively small countries) are unlikely to create a cardinal change in the level of Global Partnership funding. The accession of

new recipient countries (Ukraine has now acceded, while Kazakhstan, Belarus and other former Soviet states may well in future), on the other hand, may have a negative effect on the level of project funding in Russia, so the accession of new states must be accompanied by a parallel increase in donor pledges. Finally, the experience obtained through the Global Partnership may well be spread to other regions of the world outside of the former Soviet Union. Cooperative threat reduction experience could be put to good use resolving the situation on the Korean Peninsula, for instance, or the relationship between India and Pakistan.

### The Sustainability of the Global Partnership

The sustainability of programs begun under the Global Partnership is something that should already be under consideration. One of the most critical questions in this regard is whether project funding will continue after the ten years of the partnership are over. Several concrete steps that could be taken to address this issue are:

- increasing the proportion of funding coming from the Russian budget;
- improving the effectiveness of monitoring over the use of assistance funds;
- converting and commercializing projects wherever possible; and
- using civil society and nonproliferation organizations (scientific institutes and NGOs) to the fullest in order to create favorable conditions for the stable operation of Global Partnership projects.

### Increasing Russian Funding of the Global Partnership

Russia's economy is in far better shape today than it was when assistance programs first were initiated in the early 1990s. Therefore, increasing Russia's own contributions to the Global Partnership takes place. In fact, the \$20 billion that donor countries have pledged makes up only about one third of Russia's positive trade balance for one year. If there is a significant difference between the amount of funding received and the amount pledged, Russia could to a large extent depend on its own ability to solve the problems with which the Global Partnership is dealing, in

particular submarine dismantlement and the destruction of chemical weapons.

The Russian Stabilization Fund is a possible source of finance: in early 2005, it had accumulated about \$20 billion and an August 2005 forecast by the Economic Development and Trade Ministry predicted that it would grow to \$53 billion by year's end.

Russia has already taken steps to increase its own funding of Global Partnership projects, doubling its spending on chemical weapons elimination in 2005 when compared to the previous year.

The issue of how best to realize the potential of the Global Partnership was one of the most important topics of discussion at the April

**Table 53**  
Questions about the Global Partnership Posed to Participants in the International Conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction"

Questions Posed to Participants	Answers	
	Yes	No
Have the Evian Summit (2003) Decisions been implemented? Has the "considerable progress" that the Evian document deemed necessary been achieved?	32%	68%
Have Global Partnership donor countries relationships with Russia changed "from patronage to true partnership"?	29%	71%
Has there been a success in meeting the challenge to make the \$20 billion pledge "not a ceiling, but a floor"?	25%	75%
Is there a significant gap between pledges made and money received by Russia for new Global Partnership projects?	82%	18%
Do you agree that there are serious differences between the levels of funding provided by various Global Partnership donor countries?	96%	4%
Is it time (this year) to expand the Global Partnership and invite new members to join as recipients of international assistance, when the chief country, Russia, has not yet received all of the funding it was pledged?	61%	39%
Is it time to talk about adding new priorities to the Global Partnership when initial activities in the two main areas, submarine dismantlement and chemical weapons destruction, have yet to be completed?	61%	39%
Should Russia and Global Partnership donor states monitor expenditures more critically and strengthen auditing, trace the effectiveness of expenditures, and begin to employ independent reviews of new projects?	86%	14%
Isn't it time for large Russian companies to start funding socially oriented projects under the Global Partnership and other initiatives aimed at reducing the risks of WMD proliferation and terrorism as well as at arms reduction and disarmament?	79%	21%
Should Russia start to prepare for 2012 and the fully independent funding of programs, and begin gradually to increase its own budgetary contribution to Global Partnership projects?	86%	14%

*Note: The statistics provided above were not the result of scientific polling, since conference participants' participation in the polling was strictly voluntary.*



## Board on Sustainable Partnership for Russia (SUPR)

SUPR is a Russian nongovernmental initiative composed of leading security and arms control experts. SUPR was formed to be a small, flexible, and effective group of nongovernmental experts located and working in Russia. The Board's nongovernmental status allows it to quickly and flexibly pose and find answers to questions faced by the Global Partnership, in close coordination with Russian Government bodies. The membership of SUPR includes former Defense Ministry 12<sup>th</sup> Main Directorate head Colonel General retd. Yevgeny Maslin (SUPR chairman), Deputy Director of the Russian Federal Atomic Energy Agency, Sergei Antipov, Deputy Inspector-General of the

Accounts Chamber of the Russian Federation Assistant to the Prime Minister of the Russian Federation (2003–2004), Natalia Kalinina, Lieutenant General retd. Vasily Lata, Major General retd. Vladimir Dvorkin, Lieutenant General Gennady Yevstafiev, PIR Center Director Vladimir Orlov, Russian Ambassador Extraordinary and Plenipotentiary Roland Timerbayev, Chairman of the Russian Pugwash Committee Ambassador Extraordinary and Plenipotentiary Yuri Ryzhov, and Executive Director of the Russian-American Business Council Dmitri Yakushkin. More information on SUPR can be found on the PIR Center website: <http://www.pircenter.org/conf2003/eng/news1309.html>

23–24, 2004, international conference in Moscow entitled "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction." The conference, which was organized by the PIR Center and the Board on Sustainable Partnership for Russia (SUPR),

brought together 262 participants from 21 countries and five international organizations. A poll of participant opinions on the most urgent questions related to Global Partnership implementation was taken at the conference. The participants' answers are provided in Table 53.

## Further Reading

Anatoly Anin, "The Global Partnership at a Crossroads," *Yaderny Kontrol*, No. 4 (Winter), 2003, pp. 15–24.

The materials of the international conference "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," <http://www.pircenter.org/gpconference/eng>

Ian Anthony, "Reducing Threats at the Source: A European Perspective on Cooperative Threat Reduction," SIPRI Research Report, No. 19 (New York: Oxford University Press, 2004).

Robert Einhorn and Michèle Flournoy, *Protecting Against the Threat of Nuclear Biological and Chemical Weapons: An Action Agenda for the Global Partnership* (Washington: Center for Strategic and International Studies, January 2003).

Igor Khripunov and James Holmes (eds.), "Nuclear Security Culture: the Case of Russia,"

Center for International Trade and Security, University of Georgia, December 2004.

Maurizio Martellini and Kenneth Luongo, "The G-8 Global Partnership Initiative: Prioritizing Nonproliferation and Security Concerns," paper submitted for consideration at the Rome meeting "Assessing the G-8 Global Partnership After One Year: Status Report and Future Challenges," May 5, 2003.

Risto Penttil, "The Role of the G-8 In International Peace and Security," *IJSS Adelphi Paper*, No. 355, May 2003.

Roger Roffey, "Need for Enhanced Support for Threat Reduction in the Biological Area for Redirecting Production Facilities," presented at the Non-proliferation and Disarmament Cooperation Initiative (NDCI) Conference, London, March 4–5, 2004. Available at <http://www.dti.gov.uk/energy/nuclear/fsu/SW EDENMO.PPS>

## APPENDIX 1. DOCUMENTS

## Documents on International Assistance to Russia in the Sphere of WMD Elimination

## Multilateral

1. "Gleneagles Statement on Non-Proliferation" (Gleneagles, July 8, 2005)
2. G8 Senior Group Global Partnership Annual Report and Global Partnership Working Group, "GPWG Annual Report 2005: Consolidated Report Data" (Gleneagles, July 8, 2005)
3. "G8 Action Plan on Nonproliferation" (Sea Island, June 9, 2004)
4. G8 Senior Group, "G8 Global Partnership Annual Report" and "G8 Consolidated Report of Global Partnership Projects" (Sea Island, June 9, 2004)
5. "Global Partnership Against the Spread of Weapons and Materials of Mass Destruction: A G8 Action Plan" (Evian, June 2, 2003)
6. G8 Senior Officials Group, "Global Partnership Against the Spread of Weapons and Materials of Mass Destruction: Annual Report" (Evian, June 2, 2003)
7. Multilateral Nuclear Environmental Program in the Russian Federation (MNEPR) Agreement (Stockholm, May 21, 2003)
8. Protocol on Claims, Legal Proceedings and Indemnification to the Framework Agreement on a Multilateral Nuclear Environmental Program in the Russian Federation (Stockholm, May 21, 2003)
9. Statement by G8 Leaders, "The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction" (Kananaskis, June 27, 2002)
10. Rules of the Northern Dimension Environmental Partnership Support Fund (January 11, 2002)
11. Vienna Convention on Civil Liability for Nuclear Damage, as amended in 1997 (Vienna, September 12, 1997)

12. Agreement Establishing an International Science and Technology Center (Moscow, November 27, 1992)

## Bilateral

1. Agreement Between the Government of Canada and the Government of the Russian Federation Concerning Cooperation on the Destruction of Chemical Weapons, the Dismantlement of Decommissioned Nuclear Submarines, and the Physical Protection, Control and Accountancy of Nuclear and Radioactive Material (Sea Island, June 9, 2004)
2. Agreement between the Government of the Swiss Confederation and the Government of the Russian Federation on Cooperation in the Destruction of Chemical Weapons (Moscow, January 28, 2004)
3. Technical Implementing Agreement between the Russian Munitions Agency and the Ministry of Foreign Affairs of the Republic of Poland (Moscow, December 19, 2003)
4. Agreement between the Government of the Russian Federation and the Government of the Republic of Italy on Cooperation in the Destruction of Chemical Weapons Stockpiles in the Russian Federation (Rome, November 6, 2003)
5. Agreement between the Government of the Russian Federation and the Government of the Republic of Italy to Cooperate in the Disposition of Decommissioned Russian Nuclear Submarines, Safe Handling of Radioactive Wastes and Spent Nuclear Fuel (Rome, November 5, 2003)
6. Agreement between the Russian Ministry of Atomic Energy and the Federal Ministry of Economics and Labor of the Federal Republic of Germany on the Provision of Support for the Elimination of Nuclear Weapons which the Russian Federation has Pledged to Reduce through the Dismantlement of Decommissioned Nuclear Submarines from Russia's Northern Fleet, under the Framework of the



Global Partnership against the Spread of Weapons and Materials of Mass Destruction. (Yekaterinburg, October 9, 2003)

7. Agreement between the Government of the Russian Federation and the Government of the United Kingdom of Great Britain and Northern Ireland on Provision by the United Kingdom of Assistance for the Implementation of the Convention on the Prohibition of Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction in the Russian Federation (London, December 20, 2001)
8. Agreement between the Government of the United States of America and the Government of the Russian Federation Concerning the Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation (Moscow, August 29, Washington, September 1, 2000)
9. Agreement between the Government of the Kingdom of the Netherlands and the Government of the Russian Federation on Cooperation in the Field of the Safe Destruction of Nuclear Weapons Undergoing Reductions in the Russian Federation, and the Safe Dismantlement of Russian Nuclear Submarines (Moscow, March 14, 2000)
10. Agreement between the Government of the Russian Federation and the Government of the United States of America Regarding Cooperation in the Area of Nuclear Material Physical Protection, Control and Accounting (Moscow, October 2, 1999)
11. Protocol to the Agreement between the Government of the Russian Federation and the Government of the United States Concerning the Safe and Secure Transport, Storage and Destruction of Weapons and Prevention of Weapons Proliferation (Moscow, Washington, June 15–16, 1999)
12. Agreement between the Government of the Russian Federation and the Government of the United States on Scientific and Technical Cooperation in the Management of Plutonium That Has Been Withdrawn from Nuclear Military Programs (Moscow, July 24, 1998)
13. Agreement between the Government of the Russian Federation and the Government of the United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy (London, September 3, 1996)
14. Supplementary Agreement to the Agreement between the Government of the Russian Federation and the Government of the United Kingdom of Great Britain and Northern Ireland on Cooperation in the Peaceful Uses of Nuclear Energy (Moscow, September 3, 1996)
15. Agreement between Government of the Republic of France and the Government of the Russian Federation on Cooperation in the Area of Nuclear Energy (Moscow, April 19, 1996)
16. Agreement between the Government of Japan and the Government of the Russian Federation Concerning Cooperation for the Elimination of Nuclear Weapons Reduced in the Russian Federation and the Establishment of a Committee on this Cooperation (Tokyo, October 13, 1993)
17. Agreement between Government of the Russian Federation and the Government of the Federal Republic of Germany Concerning Assistance to the Russian Federation in the Elimination of Reduced Nuclear and Chemical Weapons (Moscow, December 16, 1992)
18. Agreement between the Government of the Republic of France and the Government of the Russian Federation on Cooperation on the Safe Disposal of Nuclear Weapons in Russia and on the Use for Peaceful Purposes of Nuclear Materials from Weapons (Paris, November 12, 1992)
19. Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation (Washington, June 17, 1992)

## APPENDIX 2. GLOSSARY

### Agreement Between the United States of America and the Russian Federation Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation

– Signed on June 17, 1992, this agreement serves as an umbrella agreement covering the U.S. provision of assistance to Russia under the Cooperative Threat Reduction (CTR) program. The goals for cooperation listed in the Agreement include: "a) the destruction of nuclear, chemical, and other weapons; b) the safe and secure transportation and storage of such weapons in connection with their destruction; and c) the establishment of additional verifiable measures against the proliferation of such weapons that pose a risk of proliferation." On June 15–16, 1999, the Parties signed a Protocol to the Agreement, which extended the period during which the Agreement would remain in force for another seven years.

### All-Russian Scientific Research Institute of Technical Physics (VNIITF)

– Federal Nuclear Center located in Snezhinsk (formerly Chelyabinsk-70), in northern Chelyabinsk region, Urals. VNIITF was founded in 1955, and played a fundamental role in the design and creation of Soviet nuclear warheads, as well as warhead safety. The center participates in various international nonproliferation programs, including the U.S. Department of Energy's MPC&A program, as well as the Nuclear Cities Initiative.

### All-Russian Scientific Research Institute of Experimental Physics (VNIIEF)

– Federal Nuclear Center located in Sarov (formerly Arzamas-16), Nizhny Novgorod region. Established in 1946 as a special design bureau for the USSR Academy of Sciences Laboratory No. 2. The center was the Soviet Union's main research and development center for nuclear weapons; it developed the first Soviet atomic bomb in 1949. The center continues to be involved in nuclear weapons research, design, and development. VNIIEF also participates in measures provided for under international treaties on the reduction and nonproliferation of nuclear weapons that ban the testing of such weapons, and undertakes joint research with foreign

partners in both fundamental and applied sciences.

VNIIEF participates in international cooperative program activities with U.S. national laboratories, as well as European and U.S. scientific organizations. It is involved in the ISTC program, MPC&A program, Nuclear Cities Initiative, etc. One of the successful Nuclear Cities Initiative projects at VNIIEF involved the creation of the Open Computing Center and the Analytical Center for Nonproliferation.

### Arctic Military Environmental Cooperation (AMEC)

– The goal of the program is to address environmental problems in the Arctic region associated with military operations. The legal basis for the program is the Declaration among the Department of Defense of the United States of America, the Royal Ministry of Defense of the Kingdom of Norway, and the Ministry of Defense of the Russian Federation, on Arctic Military Environmental Cooperation, signed on September 26, 1996 in Bergen (Norway). On June 26, 2003, in London (United Kingdom) the Parties signed an annex to the AMEC Declaration admitting the United Kingdom into the program.

Activities under the AMEC program are carried out in two main areas:

- projects to improve environmental safety during the handling of SNF, solid, and liquid radioactive wastes accumulated and created at bases and through the dismantlement of Northern Fleet nuclear submarines, and providing for the environmental safety of nuclear submarine dismantlement activities;
- projects aimed at developing technologies and creating equipment to clean land and aquifers of petroleum products, at implementing clean-up technologies at bases in Northwest Russia, and at creating equipment for the dismantlement of armaments and military hardware.

**Ballistic Missile Submarine (SSBN)** – See Fleet Ballistic Missile Submarine.

**Biological Weapon (BW)** – A device that projects, disperses, or disseminates living microorganisms, biological agents, and toxins.

The full text of these documents in Russian is available on the PIR Center website at:  
<http://www.pircenter.org/rus/gp/docs.html>



**Center for Conventional Problems and Disarmament Programs, Federal Industry Agency** (until March 2004, the Russian Munitions Agency). The directorate implements state policy in the area of industrial munitions, special chemicals and chemical disarmament, and is the state contractor for activities related to the destruction of chemical weapons and the elimination and conversion of former chemical weapons production facilities. The Center for Conventional Problems and Disarmament Programs directorate is responsible for the management and implementation of activities to ensure the safe and secure storage and destruction of chemical weapons.

**Chemical Weapon (CW)** – Gaseous, liquid, or solid chemical substances with toxic properties that are delivered using munitions and dispersal devices to cause death or severe harm to humans, animals, and plants. CW include blister, nerve, choking, and blood agents.

**Chemical Weapons Convention (CWC)** – see the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction, below.

**Chemical Weapons Destruction** – Activities to help Russia safely and in an environmentally responsible fashion dispose of some 40,000 tons of chemical warfare agents located in seven storage facilities. CW destruction has been designated as one the Global Partnership's top priorities. In contrast to nuclear submarine dismantlement, where the urgency of destruction is related to environmental considerations alone, the deadline for CW destruction is an obligation Russia undertook when it signed the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction (CWC). Chemical weapons destruction is a costly and technically and managerially challenging task that involves choosing a CW destruction technology, the construction of CW destruction facilities, the safe and secure transport of CW from storage facilities to the destruction facilities, etc.

**Closed Nuclear Cities** – cities with a special status, where Rosatom facilities are located: Lesnoy (formerly Sverdlovsk-45), Novouralsk (Sverdlovsk-44), Ozersk (Chelyabinsk-65), Sarov (Arzamas-

16), Seversk (Tomsk-7), Snezhinsk (Chelyabinsk-70), Trekhgornyy (Zlatoust-36), Zarechnyy (Penza-19), Zelenogorsk (Krasnoyarsk-45), and Zheleznogorsk (Krasnoyarsk-26).

**Control and Tracking Strip** – Specially prepared (plowed) strip of land along a guarded perimeter for detecting the traces of penetration of an intruder.

**Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (BWC)** – opened for signature on April 10, 1972, entered into force on March 26, 1975. As of December 2004, it had been ratified by 153 states (an additional 16 states had signed, but not ratified, the convention).

**Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction (CWC)** – opened for signature on January 13, 1993, entered into force on April 29, 1997. As of August 2005, ratified by 171 states (an additional 13 signatory states had yet to ratify the convention).

**Cooperative Threat Reduction (CTR) Program, also known as the Nunn-Lugar Program** – Initially a U.S. Department of Defense program established in 1992 by the U.S. Congress on the basis of the 1991 Soviet Nuclear Threat Reduction Act. The program primarily focuses on: destroying strategic offensive weapons and delivery vehicles; protection, control and accounting of nuclear weapons; providing containers and storage facilities for fissile materials; and destroying Russian chemical weapons.

**Core** – The central portion of a nuclear reactor, where atomic fission occurs (contains the fuel elements, moderator, neutron poisons, and support structures).

**Dismantlement of Nuclear-Powered Submarines** – see Nuclear-Powered Submarine Dismantlement.

**Dual-Use Item:** An item that has both civilian and military applications, and is subject to certain export controls.

**Federal Atomic Energy Agency (Rosatom)** – Established by Presidential Decree No. 314 of March 9, 2004. *On the System and Structure of Federal Organs of Executive Power*, which inherited the role of the abolished Russian Ministry of Atomic Energy (Minatom). The Agency's duties include managing the nuclear and radiation safety and security of the Russian nuclear complex, the design, modernization, production, and reduction of nuclear warheads, the management of radioactive waste, the dismantlement of nuclear-powered submarines, and the regulation and conversion of the nuclear complex. Along with the Ministry of Defense, the Agency is the main recipient of assistance through the Cooperative Threat Reduction (Nunn-Lugar) program and Global Partnership programs. Activities under these programs include: the provision of nuclear materials security, control, and accounting; weapons scientist employment; the cessation of plutonium production; and plutonium disposition.

**Fissile Material** – Material in which, under certain conditions, a self-sustaining nuclear chain reaction can occur. The fissile materials used in contemporary nuclear weapons are plutonium and highly enriched uranium.

**Fleet Ballistic Missile Submarine (SSBN):** A nuclear-powered submarine designed to deliver ballistic missiles from either a submerged or surfaced position.

**Global Partnership** – Complete name: The Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. An initiative of the G8 countries to assist Russia, Ukraine, and future additional countries in the area of nonproliferation, disarmament, the fight against terrorism, and the provision of nuclear safety. The Global Partnership was established at the G8 Summit in Kananaskis, Canada in 2002. Global Partnership priorities identified at Kananaskis include: chemical weapons destruction, dismantlement of decommissioned nuclear-powered submarines, fissile material disposition, and the redirection of former weapons scientists. The G7 countries (G8 minus Russia) pledged to provide up to \$20 billion for such projects over the course of ten years (2002–2012).

**Global Partnership Guidelines** – Guidelines adopted at the 2002 G8 Summit in Kananaskis for

projects that are to be carried out under the partnership. These guidelines include: agreements should include provisions for monitoring, auditing and transparency measures; clearly defined milestones; commitments to implement projects in a safe and environmentally sound manner, with provisions for physical protection, with liability protections, and with protection of sensitive information and intellectual property; and exemption from taxation on support offered, among other things.

**Global Partnership Principles** – Six principles adopted at the 2002 G8 Summit in Kananaskis to prevent terrorists or those that harbor them from acquiring or developing nuclear, chemical, radiological, or biological weapons; missiles; and related materials, equipment and technology.

**HEU Deal** – the Agreement between the Government of the United States and the Government of the Russian Federation Concerning the Disposition of Highly Enriched Uranium Extracted from Nuclear Weapons, also known as the HEU Deal, HEU-LEU Agreement, HEU Purchase Agreement, or Megatons to Megawatts, was signed on February 18, 1993. Under the terms of the agreement, the United States will purchase, over a 20-year period, 500 metric tons of Russian HEU that has been diluted to create 15,300 tons of LEU for use as fuel in U.S. NPPs. On January 14, 1994, the implementing contract was signed, and in November 1996, the contract was amended to increase the volume of purchases and change the pricing formula. As of June 30, 2005, 245 metric tons of HEU had been downblended under the agreement.

**Highly Enriched Uranium** – Uranium with  $U^{235}$  content equal to or exceeding 20% of the total mass of uranium.

**IAEA Contact Expert Group (CEG)** – a special contact expert group on international projects dealing with radioactive wastes in the Russian Federation. Created in 1996 under the International Atomic Energy Agency (IAEA).

A number of countries and international organizations provide assistance to the Russian Federation in the field of handling accumulated radioactive waste and spent nuclear fuel in order to resolve the most severe problems caused by past activities in production of nuclear weapons, use of nuclear



energy for peaceful and military purposes, and as a result of nuclear arms reduction. In order to promote and coordinate these efforts, a special Contact Expert Group for International Radioactive Waste Projects in the Russian Federation was established under the auspices of the IAEA.

#### The CEG's main objectives are:

- to promote cooperation between all countries and international organizations interested in contributing to projects aimed at enhancing the safety of spent fuel and radioactive waste management in the Russian Federation;
- to provide a forum for discussion and exchange of information with the view of identifying main priorities and presenting recommendations on specific projects for further cooperation;
- to avoid redundancy and duplication in project work in Russia and assure that priorities are properly addressed and made known to the international community;
- to provide points of contact to facilitate cooperation.

Currently the CEG is comprised of twelve countries: Belgium, Canada, Finland, France, Germany, Italy, the Netherlands, Norway, the Russian Federation, Sweden, the United Kingdom, and the United States of America, and four international organizations: the European Commission, International Institute for Applied Systems Analysis, International Science and Technology Center, and the IAEA.

The CEG Secretariat is located at IAEA Headquarters and operated by the Agency with financial support from the CEG member-countries. The CEG Secretariat is assigned to the Department of Nuclear Energy, Division of Nuclear Fuel Cycle and Waste Technology, Waste Technology Section.

**Illicit Nuclear Trafficking** – the illegal transfer within one country or across a border from one country to another of the following articles or materials: HEU and weapons plutonium; other sensitive nuclear materials that pose proliferation concerns; SNF reprocessing equipment for the separation of uranium isotopes; equipment for the production of heavy water; installations for the conversion of enriched uranium and plutonium and the main components for such installations, received as a result of unauthorized access. For

example, illicit trafficking generally involves the theft of over 20% enriched uranium or weapons-grade plutonium from nuclear fuel cycle enterprises. Subsequently, the thieves may leave the nuclear materials in the country where they were stolen (nuclear materials theft), or they may be illegally transferred to another country (nuclear materials contraband). Where nonproliferation is concerned, nuclear contraband poses the greatest danger. Illicit nuclear trafficking can have commercial or terrorist purposes, as well as the aim of developing a state nuclear weapons program in circumvention of the NPT.

**Intercontinental Ballistic Missile (ICBM)** – Land-based ballistic missiles with ranges greater than 5,500 kilometers.

**International Atomic Energy Agency** – founded on October 26, 1956 (in operation since July 29, 1957). Chief aim: to promote the peaceful, appropriate use of nuclear energy. As of January 1, 2002, 133 states were members of the Agency. Governing bodies: General Conference, Board of Governors. Director-General: Dr. Mohamed ElBaradei.

**International Science and Technology Center (ISTC)** – established in Moscow in accordance with the Agreement of November 27, 1992 by the European Community (now the EU) and Euratom (as one party), Japan, the Russian Federation, and the United States. The ISTC's main goal is to engage "weapons" scientists and engineers in peaceful scientific projects under the Science Project Program and the programs of the Partner and Sustainability Department. As of the end of 2004, 2,120 projects had received over \$634 million in ISTC funding.

**Irradiated Nuclear Fuel** (also called spent nuclear fuel or spent fuel) – Nuclear fuel that has been used in a reactor and extracted from the core for subsequent storage or processing.

**Joint Statements** by the Russian and U.S. presidents on nonproliferation issues and security, made in the 1990s. There were several such declarations made in the course of high-level bilateral and multilateral meetings: on January 14, 1994 in Moscow (on the nonproliferation of WMD and delivery vehicles), on September 28, 1994 in Washington (on strategic stability and nuclear

security), on May 10, 1995 in Moscow (on nonproliferation, missile systems, transparency and the irreversibility of the nuclear weapons reduction process), on April 21, 1996 in Moscow (on the HEU Agreement), on March 21, 1997 in Helsinki (on chemical weapons, the parameters of future nuclear force reductions, and on the ABM Treaty), on September 2, 1998 in Moscow (on general security challenges at the turn of the 21<sup>st</sup> century, on the principles for the management and disposition of plutonium designated as no longer required for defense purposes, on the protocol to the BWC, and on the exchange of information on missile launches and early warning), on June 20, 1999 in Köln (on strategic offensive and defensive weapons and further strengthening of stability), and on June 4, 2000 in Moscow (on the principles of strategic stability, on the management and disposition of plutonium designated as no longer required for defense purposes and related cooperation).

**Joint Statement of Principles for Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes** – A joint statement by the U.S. and Russian presidents, issued on September 2, 1998. The statement included an obligation to develop transparency measures, including international verification measures, and obligated the Parties to convert approximately 50 tons of plutonium withdrawn from nuclear military programs into forms unusable for nuclear weapons – MOX fuel or vitrification.

**Liability for Nuclear Damages** – see Nuclear Damage.

**Low-Enriched Uranium** – Uranium in which the  $U^{235}$  content is higher than that in natural uranium, but less than 20%.

**Material Protection, Control, and Accounting (MPC&A)** – An integrated system of physical protection, material control, and material accounting measures designed to deter, prevent, detect, and respond to unauthorized possession, use, or sabotage of nuclear materials. Nuclear material control measures are activities intended to confirm the presence and transfers of nuclear material and that quantitative and qualitative characteristics of nuclear materials conform to data documented through material accounting. Nuclear material

accounting measures are activities carried out to determine a quantity of nuclear material available in specific areas, as well as changes in that quantity occurring at specific times, and maintain the accounting documents associated with receipt, shipping, measured losses, inventories, and transfers to other material balance areas.

**Mayak Production Association** – Located in Ozersk (formerly Chelyabinsk-65), Chelyabinsk region, Urals. Established in 1945, Mayak produces nuclear warhead components. Mayak is the only enterprise in Russia that can reprocess SNF from nuclear-powered submarines, nuclear-powered icebreakers, and nuclear power plants. One of Russia's two main storage depots for HEU and plutonium removed from nuclear warheads is located at Mayak. The enterprise participates in the HEU-LEU program, in the U.S. Department of Energy's MPC&A program, and other international projects.

**Ministry of Atomic Energy (Minatom)** – See Federal Atomic Energy Agency.

**Northern Dimension Environmental Partnership (NDEP)** – An assistance program established by European states with the aim of improving nuclear and environmental safety in Northwest Russia. The NDEP Support Fund was established in July 2002 by the European Bank of Reconstruction and Development (EBRD) to pool grant contributions. By year-end 2004, the Nuclear Window has received approximately €150 million in donor contributions from Canada, Denmark, the European Union, Finland, France, Germany, Norway, Russia, Sweden, and the United Kingdom. The first NDEP project was the creation of a Strategic Master Plan for Northwest Russia, initiated in 2004, to aid project prioritization. The Master Plan, which will be continually updated, provides an analytical overview of the current state of decommissioning activities in the northwest, as well as their legal and regulatory framework. The plan has already defined the first broad set of urgent projects. The implementation of the first such projects, at the Gremikha Naval Base on the Kola Peninsula, in concert with France, is scheduled to begin in 2005.

**Nuclear Damage** – According to the Vienna Convention on Civil Liability for Nuclear Damage and the Protocol to amend it (INFCIRC/566), the term "nuclear damage" connotes any harm to human life or health, any property damage (inde-



pendent of its form of ownership), as well as any damage to the environment caused by radioactive, toxic, explosive, or other impact that can be caused by nuclear materials. During the implementation of cooperative nonproliferation assistance programs in Russia, disagreements have arisen both among Russian individuals and organizations and with foreign contractors regarding the distribution of responsibility for possible nuclear damages that could arise during the course of such activities. For instance, Russia does not agree with the U.S. proposal that Russia should assume responsibility for nuclear damages deliberately caused by foreign citizens working on assistance programs on Russian territory.

**Nuclear Materials** – Materials containing or capable of producing fissile materials.

**Nuclear-Powered Submarine Dismantlement** – Activities to help Russia safely and in an environmentally responsible fashion dispose of about 200 decommissioned nuclear submarines inherited from the Soviet Union, and secure many tons of spent nuclear fuel (SNF) located in these submarines and at on-shore bases. During the Soviet era, the belief was that nuclear submarines could only perish in battle; therefore, no provisions were made for their dismantlement. The infrastructure required includes not only the capacity to “chop up” the vessels themselves, but also the means to unload and transport the SNF from bases and shipyards to storage and reprocessing facilities. Nuclear submarine dismantlement is both an urgent (from an environmental point of view) and an expensive undertaking (according to some estimates, the dismantlement of one nuclear submarine costs from \$10 to \$40 million depending on its size), that has been designated a priority under the Global Partnership. As of April 2004, 194 submarines had been decommissioned, of which 96 had been dismantled. Of the remaining 99 submarines awaiting dismantlement, 55 had nuclear fuel on board.

**Physical Protection** – A combination of administrative measures, engineering and technological means, and actions of a guard force to prevent acts of sabotage or theft of nuclear materials.

**Plutonium Disposition Agreement** – The Agreement Between the Government of the United States of America and the Government of

the Russian Federation Concerning the Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation was signed on August 29 and September 1, 2000. Under the agreement, each of the Parties must dispose of no less than 34 metric tons of plutonium. Disposition could be realized through one or several of the following methods: a) irradiation of the plutonium as fuel in nuclear reactors; b) immobilization of the plutonium in glass or ceramic form; or c) any other method that the Parties agree to in writing.

**Plutonium Production Reactor Agreement** – The Agreement between the Government of the United States of America and the Government of the Russian Federation Concerning the Shutdown of Plutonium Production Reactors and the Cessation of Use of Newly Produced Plutonium for Nuclear Weapons was signed on June 23, 1994. The Parties gave up the right to renew plutonium production at reactors that had already been shut down and were to shut down the remaining reactors by 2000. The Parties were also not allowed to use plutonium produced by these reactors for the production of nuclear weapons. However, Russia refused to bring the agreement into effect, stating that the United States had failed to fund the creation of alternative energy sources.

**Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage** – Opened for signature on September 29, 1997. On July 4, 2003, 15 states signed the Protocol – Argentina (ratified), Belarus (ratified), the Czech Republic, Hungary, Indonesia, Italy, Latvia (ratified), Lebanon, Lithuania, Morocco (ratified), Peru, the Philippines, Poland, Romania (ratified), and Ukraine. The Protocol sets the limit of the operator's liability, provides a better definition of nuclear damage, and extends the geographical scope of the Vienna Convention and the time limit during which claims may be brought for loss of life and personal injury.

**Radiation Source** – A device, apparatus, equipment, or other item that contains radioactive substances or generates ionizing radiation, but is not related to nuclear facilities.

**Radioactive Wastes** – Nuclear materials and radioactive substances at the end of a useful life

cycle or in a product that is no longer useful and should be properly disposed of. Depending on the level of radiation, wastes are classified as low-, medium-, or high-level radioactive wastes. High-level waste contains about 99% of the radioactivity found in all radioactive waste combined.

**Radioisotope Thermal Generators (RTGs)** – Autonomous energy sources for heat and electricity supply to light beacons, radio beacons, and meteorological stations sited in desolate locations; the RTGs require no maintenance. Most of the generators are powered by the isotope Strontium-90. For purposes that consume more power, the radionuclide generators are powered by Plutonium-238. Depending on the type of RTG, the generator contains from 5,000 to 350,000 curies; the radioactivity emitted by RTGs, taking into account its beta-emitting daughter radioisotope Yttrium, totals about 100 million curies. For comparison, the total activity of all radioisotopes that fell to earth as a result of the accident at the Chernobyl NPP was about 50 million curies.

**Redirection of WMD Personnel to Civilian Work** – activities aimed at preventing “brain drain” – the spread of knowledge and technologies that could be used for the creation of WMD. After the dissolution of the Soviet Union and the reduction of the state defense order, many scientists and engineers with expertise in proliferation-sensitive areas (such as nuclear weapons scientists) found themselves in unstable financial situations. This led to two general consequences: first, there was a danger that these specialists would leave to work in “countries of concern” – that is, where their knowledge would be valued and well paid-for in exchange for assistance in the illegal creation of WMD components – and second, it was impossible to provide for the security of weapons and materials of mass destruction at enterprises where they were located when employees there were unable to provide for their families or were starving and had to find ways to make money outside of their regular jobs. International assistance in this sphere was aimed at: providing employment for these scientists in peaceful, civilian projects; reducing the Russian nuclear complex to the minimum size needed to provide for national security under current global circumstances; and to provide for the needs of scientists, employees and guard

forces at facilities that continue to house materials and weapons of mass destruction.

Organizations and initiatives that are or have been active in this area include: the ISTC, Nuclear Cities Initiative (NCI), Initiative for Proliferation Prevention (IPP), and the U.S. Civilian Research and Development Foundation.

**Rosatom** – See Federal Atomic Energy Agency.

**Russian Ministry of Defense** – Established in 1992 on the basis of the Soviet Ministry of Defense. Ministry functions include the organization of state orders for nuclear weapons and state oversight over the nuclear and radiation safety of nuclear weapons and military nuclear power installations throughout their life cycles. Along with the Federal Atomic Energy Agency, the Ministry of Defense is the main recipient of assistance through the Cooperative Threat Reduction (Nunn-Lugar) program and Global Partnership programs to provide for safe and secure storage and transport of nuclear warheads, their accounting and control, the elimination of strategic offensive weapons, etc.

**Russian Munitions Agency** – Agency in charge of chemical weapons elimination until March 2004, when the agency was abolished. Its function was absorbed by the new Center for Conventional Problems and Disarmament Programs, a directorate under the Federal Industry Agency.

**Second Line of Defense** – a U.S. Department of Energy assistance program under which Russian customs posts are provided up-to-date technical equipment to detect and interdict the illegal transit of radioactive and fissile materials across the border. This equipment complements export controls measures that are considered the “first line of defense.”

**Senior Group** – a group of high-level officials (at the deputy foreign minister level) created in January 2004 when the G8 presidency was transferred to the United States. Its mandate is broader than that of the Global Partnership Senior Officials Group (see below) and includes additional nonproliferation issues. An additional mechanism established to provide coordination under the Global Partnership is the expert-level Global Partnership Working Group (GPWG), which is involved in implementation issues. This latter group is directly



subordinate to the Senior Group, as are two additional G8 groups: the Nonproliferation Experts Group (NPEG) and the Nuclear Safety and Security Group (NSSG). The Senior Group Chair in 2004 was U.S. Under Secretary of State John Bolton, and in 2005, the post is held by David Richmond, Director-General for Defense and Intelligence and the UK Foreign and Commonwealth Office.

**Senior Officials Group** – a group of high-level government representatives created by a decision of the G8 leaders at the Kananaskis Summit. The SOG was created to coordinate Global Partnership activities.

The SOG Chair is a high-level official from the country currently holding the G8 presidency. For instance, in 2002 the post was held by Canadian Deputy Minister of Foreign Affairs James Wright of Canada, and in 2003 it was held by Director of International and Strategic Affairs at the French General Secretariat for National Defense Salome Zourabichvili. Until the beginning of 2004, the Senior Officials Group met on a regular basis, generally once a month. During the first year of its existence, the SOG concentrated on disagreements related to project implementation, in particular, taxation, nuclear liability, and the transformation of pledges into real project funding. The SOG also focused on attracting non-G8 countries into the Global Partnership – both as donors and as recipients. In 2004, the duties of the Senior Officials Group were transferred to the Senior Group (see above).

**Spent Nuclear Fuel (SNF)** – See Irradiated Nuclear Fuel.

**Submarine-Launched Ballistic Missile (SLBM)** – A ballistic missile of various types with a range of over 600 km that is carried aboard and launched from a submarine.

**Transportation and Storage of Nuclear Weapons** – Activities of particular importance in the early 1990s, when in addition to the regular threat posed by the servicing and planned replacement of nuclear warheads, the Russian military was faced with the need to affect the removal of nuclear warheads from tactical delivery vehicles in accordance with the September-October 1991 unilateral initiatives of Presidents George Bush and Mikhail Gorbachev; the removal of tactical war-

heads from Ukraine and Kazakhstan in the spring of 1992; as well as the removal of warheads from strategic weapons in Belarus, Kazakhstan, and Ukraine. Under the CTR program, the assistance Russia received included technical equipment for the transport and physical security of nuclear warheads, help creating an automated continuous monitoring system for warheads under transport, assistance evaluating security measures, and support for the physical protection, control and accounting of nuclear warheads.

**Treaty between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms (START Treaty)** – signed on July 31, 1991. The Lisbon Protocol, signed on May 23, 1992, transformed the Treaty into a five-party agreement between Belarus, Kazakhstan, Russia, Ukraine, and the United States. The Treaty entered into force on December 5, 1994.

**U.S. Defense Department Assistance Programs** – The U.S. Department of Defense has provided financial assistance to Russia since 1992. As of 2003, Congress had allocated approximately \$4.35 billion for such programs. Programs funded at present and in the past by the Defense Department include work in the following areas:

- the safe and secure transport of nuclear warheads;
- the safe and secure storage of nuclear warheads;
- the elimination of strategic offensive weapons;
- military-environmental cooperation between Russia, Norway and the United States (and since 2003, the United Kingdom) in the Arctic region under the AMEC program;
- removing nuclear materials from the non-Russian post-Soviet space to secure storage facilities (under Project Sapphire and Operation Auburn Endeavor);
- construction of facilities for the destruction of CW in Russia;
- biosecurity and biosafety in Russia;
- funding the U.S. Civilian Research and Development Foundation;
- supporting the operations of the ISTC;
- shutting down plutonium production reactors;

- strengthening export control procedures;
- constructing a fissile material storage facility (FMSF) at Mayak; and
- preventing "brain drain" through the Initiative for Proliferation Prevention (IPP).

**U.S. Department of Energy Assistance Programs** – The U.S. Department of Energy has provided assistance to Russia since the early 1990s. As of 2003, Congress had allocated approximately \$4.5 billion for these programs. Programs funded at present and in the past by the Defense Department include work in the following areas:

- shutting down plutonium production reactors;
- physical security upgrades at the BN-350 reactor (in Aktau, Kazakhstan);
- preventing "brain drain" through the Global Initiatives for Proliferation Prevention (GIPP), Initiative for Proliferation Prevention, (IPP), and Nuclear Cities Initiative (NCI);
- establishment and strengthening of MPC&A systems at Russian installations and facilities;
- reducing the use of HEU through the Reduced Enrichment for Research and Test Reactors program;
- strengthening export control procedures in Russia and the other CIS states;
- plutonium disposition (both in Russia and the United States);
- improving border controls through the Second Line of Defense program;
- supporting the Trilateral Initiative between Russia, the United States and the IAEA, which aims to put U.S. and Russian weapons-origin fissile materials under IAEA safeguards;
- disposition of excess U.S. and Russian HEU by "blending it down" to enrichment levels in nuclear power reactor fuel (over 30 tons of U.S. HEU has been downblended to date);
- developing methods and procedures for secure and transparent dismantlement of nuclear war-

heads that do not pose a threat of revealing secret information; and

- repatriating Russian-origin nuclear materials from outside Russia to secure storage facilities through the Russian Research Reactor Fuel Return (RRRFR) Initiative ("Project Vinca" removed fuel from Belgrade; other Russian HEU has been returned from Romania, Bulgaria, Uzbekistan, the Czech Republic, and Latvia).

**U.S. State Department Assistance Programs** – The U.S. Department of State has provided financial assistance to Russia since 1992. As of 2003, Congress had allocated approximately \$1.15 billion for such programs. Programs funded by the State Department include work in the following areas:

- preventing the spread of biological weapons technologies in Russia;
- supporting the U.S. Civilian Research and Development Foundation;
- strengthening export control procedures;
- supporting the operations of the ISTC;
- preventing "brain drain" through the Initiative for Proliferation Prevention (IPP); and
- reducing the use of HEU through the Reduced Enrichment for Research and Test Reactors program.

**Vienna Convention on Civil Liability for Nuclear Damage** – Opened for signature on May 21, 1963, entered force on November 12, 1977. As of May 13, 2005, there were 33 Parties to the Convention and 14 signatories. The Russian Federation ratified the treaty on March 2, 2005, and it entered into force in Russia on August 13, 2005. (See also: Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, above.)

**Weapons-Grade** – Refers to nuclear material that is most suitable for the manufacture of nuclear weapons – e.g., uranium enriched to 93% U<sup>235</sup> or plutonium that is over 90% Pu<sup>239</sup>. Crude weapons can be fabricated from lower-grade material.



## ABBREVIATIONS

AIDA – Aide au démantèlement, France's dismantlement assistance program.

ALCM – Air-launched cruise missile.

AMEC – Arctic Military Environmental Cooperation.

ASM – Air-to-surface missile.

BW – Biological weapons.

BWC – Biological and Toxin Weapons Convention.

CEG – IAEA Contact Expert Group.

CERN – European Center for Nuclear Research.

CIS – Commonwealth of Independent States.

CNCP – UK Closed Nuclear Cities Partnership.

CRDF – U.S. Civilian Research & Development Foundation.

CTR – Cooperative Threat Reduction program, also known as Nunn-Lugar.

CW – Chemical weapons.

CWC – Chemical Weapons Convention.

CWDF – Chemical Weapons Destruction Facility.

DEK – Department of Export Control (abolished, 2004).

DFAIT – Canadian Department of Foreign Affairs and International Trade.

DOD – U.S. Department of Defense.

DOE – U.S. Department of Energy.

DTI – Department of Trade and Industry (UK).

DTRA – Defense Threat Reduction Agency.

EC – European Communities, from 1993 the European Union.

ETRI – Expanded Threat Reduction Initiative.

EU – European Union.

FIS – Russian Federal MPC&A Information System.

FMSF – Fissile Material Storage Facility.

FY – Fiscal year.

GAO – U.S. Government Accounting Office (audit authority).

G8 – Group of Eight.

GLCM – Ground-launched cruise missile.

GosNIIOKhT – State Scientific Research Institute of Organic Chemistry and Technology.

GPWG – Global Partnership Working Group.

GSPI – State Specialized Design Institute.

HEU – Highly enriched uranium.

IAEA – International Atomic Energy Agency.

ICBM – Intercontinental ballistic missile.

INFCIRC – Information circular (IAEA document).

IPP – Initiative for Proliferation Prevention.

IPPE – Institute for Physics and Power Engineering.

IRBM – Intermediate-range ballistic missile.

IRMM – Institute for Reference Materials and Measurements (Geel, Belgium).

ISTC – International Science and Technology Center.

LEU – Low-enriched uranium.

LRW – Liquid radioactive waste.

LWGR – Light water cooled, graphite moderated reactor (also, RBMK).

MC&A – Materials control and accounting.

MEPhI – Moscow Engineering and Physics Institute (also, MIFI).

MERT – Ministry of Economic Development and Trade.

MFA – Ministry of Foreign Affairs.

MIFI – Moscow Engineering and Physics Institute (also, MEPhI).

Minatom – Ministry of Atomic Energy (abolished, replaced by Rosatom).

Minsredmash – USSR Medium Machine-Building Ministry (the precursor to Minatom).

MIRV – Multiple independently targeted reentry vehicle.

MNEPR – Multilateral Nuclear Environmental Program in the Russian Federation Agreement.

MOFA – Ministry of Foreign Affairs of Japan.

MoU – Memorandum of Understanding.

MOX – Mixed plutonium and uranium oxide fuel.

MPC&A – Materials protection, control, and accounting.

MSZ – Machine Engineering Plant, Elektrostal (sometimes called the Machine Building Plant).

MWt – Megawatt.

NCI – Nuclear Cities Initiative.

NADR – Nonproliferation, Antiterrorism, De-mining, and Related activities (U.S. State Department assistance program).

NDEP – Northern Dimension Environmental Partnership.

NIIAR – Russian Federation State Research Center – Scientific Research Institute of Atomic Reactors (SRIAR).

NIKIET – N.A. Dollezhal Research and Development Institute of Power Engineering.

NIS – Newly independent states (former Soviet republics).

NNWS – Non-nuclear-weapon state.

NPEG – G8 Non-Proliferation Experts Group.

NPP – Nuclear power plant.

NPS – Nuclear powered submarine.

NPT – Treaty on the Non-Proliferation of Nuclear Weapons.

NSSG – Nuclear Safety and Security Group.

NWS – Nuclear-weapon state.

NZKhK – Novosibirsk Chemical Concentrates Plant.

OKBM – Afrikantov Experimental Machine Building Design Bureau.

PP – Physical protection.

PWR – Pressurized water reactor (also, VVER).

RBMK – Light water cooled, graphite moderated reactor (also, LWGR).

RMTC – Russian Methodological and Training Center.

Rosatom – Federal Atomic Energy Agency.

Rostekhnadzor – Federal Service for Environmental, Technological, and Nuclear Oversight.

RTG – Radioisotope thermal generator.

SATC – Security Assessment and Training Center.

SKhK – Siberian Chemical Combine.

SLBM – Submarine-launched ballistic missile.

SLCM – Sea-launched cruise missile.

SNF – Spent nuclear fuel.

SOG – G8 Senior Officials Group.

SRIAR – Russian Federation State Research Center – Scientific Research Institute of Atomic Reactors (NIIAR).

SRF – Strategic Rocket Forces.

SRW – Solid radioactive waste.

SSBN – Nuclear-powered ballistic missile submarine.

SSGN – Nuclear-powered cruise missile submarine. Note that while these submarines use nuclear propulsion, they no longer carry nuclear-tipped cruise missiles.

SSN – Nuclear-powered attack submarine. Note that while these submarines use nuclear propulsion, they do not carry nuclear weapons.

START – Strategic Arms Reduction Treaty.

TACIS – Technical Assistance to the CIS (an EU assistance program).

TNW – Tactical nuclear weapons.

TUK – Spent nuclear fuel transport and storage containers.

USEC – United States Enrichment Corporation (involved in HEU-LEU Deal).

VNIIA – All-Russian Scientific Research Institute of Automation.

VNIIEF – All-Russian Scientific Research Institute of Experimental Physics.

VNIIAES – All-Russian Scientific Research Institute for Nuclear Power Plant Operation.

VNIIKht – All-Russian Scientific Research Institute of Chemical Technology.

VNIINM – A. A. Bochvar All-Russian Scientific Research Institute for Inorganic Materials.

VNIITF – All-Russian Scientific Research Institute of Technical Physics.

VNIPIET – All-Russian Scientific Research and Design Institute for Energy Technology.

VVER – Pressurized water reactor (also, PWR).

WMD – Weapons of mass destruction.

ZATO – Closed administrative-territorial unit, also referred to as a "closed" nuclear city.



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## PIR Center – Basic Facts

PIR Center (the Center for Policy Studies in Russia) is an independent nongovernmental organization founded in April 1994 and based in Moscow. PIR Center carries out research, as well as educational, public awareness and publishing activities, and provides consulting services.

The priority areas of the Center's research studies remain, from its founding to now, international security, arms (primarily nuclear) control and non-proliferation of weapons of mass destruction.

In less than ten years PIR Center has become the leading Russian nongovernmental research organization in the area of international security. The Center has more than 20 staff members working on 10 short- and long-term projects. In its day-to-day operations, PIR Center maintains close contacts with executive and legislative authorities of the Russian Federation as well as foreign countries.

The Center receives considerable support from its Advisory Board that consists of 7 corporate and 56 individual members from Russia and foreign countries, including 4 Academicians of the Russian Academy of Science, 11 Doctors of Science and 20 PhDs.

Since 1997, the PIR Center has been developing educational programs in the area of nonproliferation to establish in Russia a community of young specialists in this field. Under its educational projects, the Center closely interacts with the leading Russian universities and institutes: MGIMO, MEPhI, St. Petersburg State University, Tomsk Polytechnic University, and others. A special emphasis is put on the interaction with "closed" nuclear cities: Lesnoy, Novouralsk, Ozersk, Sarov, Seversk, Snezhinsk, and Zheleznogorsk. Annually PIR Center organizes Nonproliferation Summer School for young specialists from Russia and the CIS countries. Today, over 400 PIR Center alumni are working in Russia.

Since its establishment, the PIR Center has been publishing its research materials on international

security issues in its periodicals, monographs, guides and textbooks.

The first project of the PIR Center was the publication of the journal *Yaderny Kontrol* whose pilot issue came out in November 1994. By December 2005, the PIR Center published as many as 77 issues of the journal, which is distributed in 115 cities across the world both in Russian and in English.

After several stages of development over its eleven-year history, it has become the leading Russian edition on international security, nonproliferation of weapons of mass destruction and arms control. It is the "business card" of the Center.

Today, *Yaderny Kontrol* is a quarterly academic edition of firm standing, replete with in-depth analytical materials, discussions and useful information, that comprises political, military and technical materials, reflects the concerns of Russian nuclear industry, and defends Russian national interests.

High-ranking Russian and foreign politicians not merely read the journal but also express there their views on international security issues. The journal authors include: Mohamed ElBaradei, IAEA Director General; Yuriy Baluevsky, Chief of the Russian Federation Armed Forces General Staff; Sergei Kislyak, Deputy Minister of the Russian Ministry of Foreign Affairs, and many others.

The journal is a valuable source of information for experts and decision-makers in Russia as well as China, Germany, Finland, France, India, Iran, Norway, Pakistan, Republic of Korea, Switzerland, Sweden, the United Kingdom, and the United States.

PIR Center also maintains a website [www.pircenter.org](http://www.pircenter.org). This site is updated on a daily basis, it monitors and analyzes all major events that may affect Russian and international security and contains extensive dossiers on selected aspects of international security including the Global Partnership, the NPT, Iran, the DPRK and some other. In addition there you can find further information about the PIR Center activities.




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Internet: <http://www.trialogue.ru>

**On April 20-22, 2006 the PIR Center will host the  
Moscow International Security Conference**

**"THE G8 GLOBAL SECURITY AGENDA: CHALLENGES AND INTERESTS.  
TOWARDS THE ST. PETERSBURG SUMMIT"**

The Conference, held in the context of the Russian G8 Presidency, will bring together over 100 decision-makers as well as leading governmental and nongovernmental experts from the G8 states, China, India, Brazil, non-G8 Global Partnership member countries, along with representatives of Russian and foreign businesses and organizations dealing with security issues, including Global Partnership practitioners.



The conference is being held in coordination with the Presidential Administration of the Russian Federation and the Ministry of Foreign Affairs of the Russian Federation. PIR Center also enjoys the active cooperation of several Russian governmental organizations, including the Security Council, the Ministry of Defense, and the Federal Agency of Atomic Energy.

The goals of the upcoming event are to gather on the eve of the G8 Summit to discuss the most urgent threats to international security, including new challenges to the non-proliferation regime, the threat of megaterrorism, as well as implementation of the G8 Global Partnership and possible G8 influence on the security situation in such regions as Central Asia, the Greater Middle East, and East Asia.

This conference will provide an important platform for an in-depth discussion on national and international responses to new threats and challenges to international security.

For additional information please visit the conference website

<http://www.pircenter.org/g8conference/eng/>





