

# WITH **COURAGE** AND **PERSISTENCE**

Eliminating and Securing Weapons of Mass Destruction with the  
Nunn-Lugar Cooperative Threat Reduction Programs



**JOSEPH P. HARAHAAN**  
DEFENSE THREAT REDUCTION AGENCY



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## FOREWORD

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This book recounts the history of one of America's most important national security programs and celebrates the work of the many public servants who have made it a success. The Nunn-Lugar Cooperative Threat Reduction Program, which became law in 1991, was aimed at providing American funds and technical expertise to help safeguard and dismantle vulnerable stockpiles of nuclear, chemical and biological weapons and materials in the former Soviet Union. Although much of this original mission has been completed, the capabilities of the Nunn-Lugar Program and the Defense Threat Reduction Agency (DTRA), which implements it, have expanded to meet global proliferation threats and much more important work remains to be done. Nunn-Lugar and DTRA will continue to be vital components of the U.S. national security strategy.

With the collapse of the Soviet Union, several emerging nations inherited staggering quantities of nuclear, chemical and biological weapons and the infrastructure that supported them. For example, Ukraine, Kazakhstan and Belarus became the 3rd, 4th, and 8th largest nuclear weapons powers in the world. Political upheaval and economic hardship in the former Soviet Union left warheads, delivery systems and technology vulnerable to diversion or sale. A vast cadre of scientists, engineers and military personnel who had spent much of their professional careers supporting the Soviet Weapons of Mass Destruction complex faced the prospect of not being paid. In essence, the political structure and financing that had sustained and safeguarded the enormous Soviet WMD industry had broken down.

As the book describes, the Nunn-Lugar Program had to overcome great distrust on both sides of the Cold War divide. Americans were eager to reap a peace dividend by reducing overseas commitments. Launching a major effort to assist the former Soviet Union was politically counterintuitive in the United States. Russia's opening of

many defense facilities to its main geopolitical and military opponent was equally improbable. But both sides realized that peace and prosperity depended on how we resolved the threats posed by the arsenals created to fight the Cold War. Both sides accepted the responsibility to ensure that these stockpiles of weapons were safeguarded and dismantled so that they would not fall into the wrong hands. This common set of objectives, combined with the remarkable work of employees from the Defense Threat Reduction Agency and their counterparts in the former Soviet Union paved the way to success.

Since 1991, the program has amassed an impressive list of accomplishments in the former Soviet Union. The Nunn-Lugar program facilitated the arrangements that led Ukraine, Belarus, and Kazakhstan to forego the nuclear weapons that were based on the territory when the Soviet Union broke apart. As a result, all three countries are nuclear weapons free. Overall, Nunn-Lugar has deactivated more than 7,600 strategic nuclear warheads – more than arsenals of France, Britain and China combined. It has destroyed more than 2,500 nuclear capable missiles, 1,187 missile launchers, as well as 33 submarines and 155 bombers. More than 1,675,097 rounds of chemical munitions have been destroyed, and more than 4,129 metric tons of chemical weapons have been neutralized.

During the 1990s and into the new century, the threat posed by WMD proliferation grew in complexity as terrorist groups acquired a global reach, new nuclear weapons states emerged, and the explosion of information technology facilitated the spread of WMD know-how. Building on the expertise acquired in dealing with WMD in the former Soviet Union, the Nunn-Lugar Program has evolved to meet emerging global threats. Today, Nunn-Lugar is not merely a program, or a funding source, or a set of agreements. It is an engine of non-proliferation cooperation, expertise, and

problem solving that can be applied around the world. It serves as a resource for responding to proliferation emergencies and building ties to countries that want help contending with WMD stockpiles and infrastructure. It has been instrumental in dealing with chemical weapons stockpiles in Albania and Libya, and it is engaged with international partners on the problem of Syria's chemical weapons.

The Nunn-Lugar program also is devoting increasing attention to reducing the risks associated with biological weapons, and with good reason. Terrorist organizations have made no secret of their desire to use biological weapons. Deadly pathogens are easier to obtain, conceal, and transport than nuclear materials. Even crude bio-weapons could produce terror and chaos with random outbreaks of virulent diseases. Self-infected suicidal bioterrorists could carry their deadly cargo anywhere in the world in just days. This is why strategies to combat bioterrorism must include efforts to protect laboratories and other pathogen sources, sharpen bio-weapon identification, and improve means of interdicting bio-weapon supply chains. Nunn-Lugar's work in Africa, Central and South Asia, and elsewhere is helping to secure vulnerable facilities, promote cooperative research and transparency in the handling of dangerous pathogens,

and build an early warning system devoted to detecting and diagnosing infections quickly.

It is impossible to determine what tragedies may have been avoided because of the work of the Nunn-Lugar Program. But we know that the stakes remain high. Controlling WMD is essential, not merely because of the horrific loss of life that could result from a WMD attack, but also because such an attack could shake the global economy, further burden national budgets, constrain investments in human development, and create instability in many parts of the world. It would also increase the chances for nuclear proliferation and add disturbing uncertainty to future terrorist threats.

We believe that the proliferation of WMD remains the number one national security threat facing the United States and the international community. Overcoming this threat requires constant vigilance and effort. This book's thorough and insightful account of the history of the Nunn-Lugar program will expand any reader's understanding of the ongoing proliferation challenges that we face and the need for resolute action. Equally important, it demonstrates that even under conditions of rivalry and distrust, cooperation is possible to address the risks that weapons of mass destruction pose to humankind.

Senator Richard Lugar and Senator Sam Nunn

## INTRODUCTION

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When the Soviet Union collapsed suddenly in December 1991 it was the world's largest nuclear state and its failure had serious consequences. The end of the Soviet Union was rapid, unplanned, and chaotic, especially for political and military leaders of Russia, Belarus, Ukraine and Kazakhstan. These nations inherited all of the Soviet Union's nuclear weapons, its chemical weapons, and most of its biological weapons institutes and production facilities. That is the point where this history begins.

The United States government and the Congress had to address a series of new policy issues. What would be U.S. foreign policy and military strategy towards all nations of the former Soviet Union? What would be its policy towards the four new states – Russia, Belarus, Ukraine and Kazakhstan, that had inherited operational strategic forces and nuclear weapons in the former Soviet Union's nuclear arsenal? That arsenal had approximately 27,000 strategic and tactical nuclear weapons, eight modern strategic rocket armies with 1,398 intercontinental ballistic missiles, 162 long-range strategic bombers, and 940 modern submarines, equipped with 2,804 submarine launched ballistic missiles. Would U.S. leaders renegotiate and modify existing strategic arms reduction treaties, for instance the Strategic Arms Reduction Treaty (START) or the Intermediate-Range Nuclear Forces (INF) Treaty?

These arms control treaties were the key. The United States decided to offer assistance to Russia, Belarus, Ukraine and Kazakhstan, initially with equipment and expertise, so that they might meet their START Treaty objectives and to achieve their nonproliferation objectives. Initiated in 1991 by U.S. Senators Sam Nunn and Richard G. Lugar, the cooperative assistance program began slowly. Gradually political and military leaders in the new nations examined the status of their inherited strategic forces, the international arms control treaties, and the American offer of assistance. A few General

Staff and Strategic Rocket Army officers stepped forward and engaged American defense leaders in discussions on how to develop practical ways to assist strategic rocket armies in the field. From the beginning, it was a cooperative international program, one based on a concept that the United States would respond to specific requests from the recipient nations.

In the decade of the 1990s there were constant adjustments in leadership, financial commitments, managerial structures, environmental standards, legal commitments, and Congressional oversight. Driven by U.S. strategic interests, the Nunn-Lugar Cooperative Threat Reduction program directly aided Ukraine in securing and eliminating its inherited strategic rocket army and heavy bomber forces. It aided Kazakhstan in sealing its nuclear testing tunnels, in packaging, transporting and transferring the highly enriched uranium, and in eliminating residual strategic nuclear forces and abandoned biological weapons production facilities. The cooperative programs lasted many years, involving U.S. program managers and officials living in the new nations or in making frequent visits. Year after year, the CTR program involved hundreds of American officials.

When Russian leaders engaged the United States, they concentrated on assistance to eliminate excess nuclear ICBMs, strategic bombers, and nuclear submarines and missiles. Collapse of the Russian ruble in 1998 increased Russian requests for assistance. Then, following the terrorist attacks of the United States in September 2001, Russian general officers requested assistance in transporting via rail hundreds of nuclear warheads from operational strategic rocket armies and naval ports to national nuclear weapons storage facilities. They requested additional equipment to improve the storage sites' safety and security systems. Finally, the Russian government reorganized and developed a new international program to assist in the elimination of its massive arsenal of chemical weapons.

In recent years, the leaders of the Nunn-Lugar Cooperative Threat Reduction program examined how to provide assistance to many nations with insecure national biological laboratories. New equipment, training, and new facilities transformed national biological laboratories in Georgia, Kazakhstan, Azerbaijan and Afghanistan. Throughout all these new and continuing assistance programs, Senators Nunn and Lugar provided their support and guidance. They traveled to the region frequently, visiting strategic rocket regiments, missile elimination sites, bomber elimination bases, submarine destruction sites, military storage depots, weapons production facilities, fissile missile storage areas, and new chemical weapons destruction facilities and biological laboratories. Their support was invaluable.

In researching this book I examined U.S. government documents, program and project briefings, project manager's reports, annual reports to Congress, financial documents, Congressional testimony, and CTR reports from Senator Richard G. Lugar's office. I traveled to capital cities and project sites in Russia, Ukraine, and Kazakhstan. I interviewed civilian leaders, military officers, national contractors, U.S. ambassadors, and project managers in these nations. In the United States, I interviewed key people in the CTR program: Jim Reid, General Kuenning, General Lajoie, Laura Holgate, Susan Koch, Andrew Weber, John Connell, Paul Boren, John Booker, Mary Ann Miles, Mark Foster, Don Parman, Gene Hicks, Barrett Haver, Colonel Richard Green, Lt. Colonel Ray Freeland, Bob Dickey, Luke Kluchko, Hunter Lutinski, Bill Moon, Tom Rutherford, and S. Elizabeth George. I appreciate their time and insights.

Agency support for the research and writing of this history came from several individuals. Brigadier General Thomas E. Kuenning, Jr., USAF (Retired) led the CTR

Directorate from 1998 to 2004. He encouraged the project's initiation. Colonel Mark F. Foster, chief of staff for the directorate supported several key trips to Ukraine and Russia. Early in the research, General Kuenning recommended traveling to Ukraine and working with Lt. General Mikhtyuk, Commander, 43<sup>rd</sup> Rocket Army. That collaboration produced a valuable report. As the project continued, David J. Rigby, Chief, Public Affairs at the agency offered protection and advice from the sharp knives of those hostile to long-term projects. During the effort, I spent a year as a research fellow at the Woodrow Wilson Center of International Center for Scholars in Washington, D.C. It stimulated the writing of several chapters. Early and continuously Harold Smith, Jr. encouraged and assisted me in the research and in contacting key Russian officials. Finally, Ken Myers, Director, DTRA supported the final effort to edit, illustrate, and publish this history.

Bianka J. Adams, an excellent historian and colleague, edited the manuscript. In that task, Emily A. Masiello assisted. Richard Spearman read and added comments on several chapters. When it came time for assembling the final manuscript into all of its parts --- the tables, photographs, maps, bibliography, glossary, and index -- I am indebted to Christopher Kwan. His organizational skills and intelligence made it a better history. Rey Ovalle steered the finished design through the government bureaucracies to final publishing. Everyone knows that researching, writing, editing, illustrating and publishing is both an individual and collective work. The author is credited on the cover and title pages. The contributions of others are mentioned only here. This fact obscures the appreciation I hold for their work and contributions. This history could not have been published without them.

Joseph P. Harahan  
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Joseph P. Harahan was the senior historian at the Defense Threat Reduction Agency. He retired in 2010. He received a doctorate in American History from Michigan State University. During his career, he was the historian at the On-Site Inspection Agency, special assistant to the Historian of the Air Force, and a staff historian at the Air Force's Strategic Air Command. Early in his career, he was an assistant professor of history at the University of Richmond, Virginia. He is the author of the following books: *Responding to War, Terrorism, and WMD Proliferation: History of DTRA, 1998-2008* (2009) *On-Site Inspections under the CFE Treaty* (1997), and *On-Site Inspections under the INF Treaty* (1993). He researched, wrote and published multiple articles and lectures. He is the coeditor on a multi-volume (12 books) Air Force history series.



## **Collapse, Independence, Nuclear Inheritance, New Alliances, and New Initiatives**

### **43<sup>rd</sup> Strategic Rocket Army's new commander**

When Colonel General Vladimir Alexeyevich Mikhtyuk arrived in Vinnitsa, Ukraine, USSR in January 1991, he assumed command of the 43<sup>rd</sup> Rocket Army, the largest army in the Soviet Union's Strategic Rocket Forces (SRF). With 35,000 men, the 43<sup>rd</sup> Rocket Army consisted of eight divisions: the 19<sup>th</sup>, 46<sup>th</sup>, and 50<sup>th</sup> Missile Divisions; and the 32<sup>nd</sup>, 33<sup>rd</sup>, 37<sup>th</sup>, 43<sup>rd</sup> and 49<sup>th</sup> Guards Missile Divisions. Widely scattered over thousands of square kilometers, the rocket army's missiles and launchers were deployed on the territory of two Soviet republics: Ukraine and Belarus. The army had five types of intercontinental ballistic missiles: SS-19s, SS-24s, SS-25s, SS-20s and SS-4s. Equipped with more than 1,300 nuclear warheads, the 43<sup>rd</sup> Rocket Army had a larger arsenal than the combined strategic nuclear forces of Great Britain, France and China. According to General Mikhtyuk, the rocket army's mission in the USSR's military order of battle was to prepare and maintain its strategic forces in a state of high combat readiness with the ability to launch a nuclear missile attack in two directions, west and east (United States and China) under any conditions, with a high degree of accuracy and secrecy.<sup>1</sup> It was by any measure, a formidable rocket army.

While the order of battle determined the mission, General Mikhtyuk, the rocket army's division commanders, and its officers determined the military standards necessary for sustained, continuous combat operations. During the Cold War, the Soviet Union's ICBM missile forces were on

continuous alert status. Mikhtyuk recalled that "it was not easy to be on missile guard duty near missile-launching control centers and at battle stations in special facilities, often deep underground, in enclosed spaces and with difficult living conditions."<sup>2</sup> It was, in his opinion, "hard, intense" work. Like many officers in the Strategic Rocket Forces, the commanding general's career, while exceptional, illustrated the experiences of Soviet missile officers during the Cold War.

A Russian native, Mikhtyuk joined the Soviet Armed Forces in 1955 when he enrolled in the P.S. Nakhimov Black Sea Naval Academy. Following graduation in 1960, he was inspired by the space missions of Colonel Yuri Gagarin, Hero of the Soviet Union, to join the nation's new Strategic Rocket Forces. During the next 20 years, Mikhtyuk rose through the ranks of junior and mid-level missile officers to command a missile regiment and serve as chief of staff, deputy commander and commander of a missile division. In 1979 he attended the prestigious F. E. Dzerzhinsky Missile Forces Academy in Moscow. Shortly thereafter, General Mikhtyuk assumed command of a missile division stationed in Barnaul. In 1983 he became chief of staff and then deputy commander of the 43<sup>rd</sup> Rocket Army, headquartered in Vinnitsa, Ukraine. Subsequently, he was promoted and served as commander of the 50<sup>th</sup> Rocket Army, with five missile divisions. In 1990, due to force reductions and missile eliminations mandated by international arms control treaties, the SRF consolidated many rocket divisions and disbanded one army, the 50<sup>th</sup> Rocket Army. General Mikhtyuk returned to professional military school, attending the Voroshilov Military Academy,

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the Soviet Union's Armed Forces General Staff Academy. In January 1991, he took the oath as commander of the 43<sup>rd</sup> Rocket Army, the largest missile army in the Soviet Union.<sup>3</sup> Yet, after 36 years of service in the SRF, there was nothing in the general's education, experiences or career that could prepare him for the changes he was about to encounter.

There was nothing to indicate that in less than a year, the 43<sup>rd</sup> Rocket Army's missile forces would be based, not in two republics, but in two separate nations: Ukraine and Belarus. Additionally there was nothing to tell him that the command center for all of the rocket army's combat operations would one day be located in a third nation: Russia. There was nothing to foretell the pressure from thousands of missile officers, men and their families requesting

voluntary transfers out of the rocket army to military units in their native countries. Moreover there was no reason to envision the separation of the SRF's nuclear safety and surety systems, a disruption that would cause hundreds of warheads to accumulate at the rocket army's nuclear storage areas and depots. There was no expectation that the entire 43<sup>rd</sup> Rocket Army would be disbanded, especially since it had three of the Soviet Union's most advanced strategic missiles: SS-24s, SS-25s and SS-19s. There was nothing that would have allowed him to see a reason for removing every one of the rocket army's missiles from its silo and for destroying every missile silo, underground command post, all support structures, weapons depots, missile cabling, and related buildings and infrastructure. Nor could the



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General Vladimir A. Mikhtyuk with President Stanislav S. Shushkevich (r.) in Belarus, February 1992



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43<sup>rd</sup> Rocket Army's divisions and regiments, February 1992

general have seen the furious infighting in the new nations, especially Ukraine, over the control and ownership of the rocket army, its missiles and forces. Further, there was no crystal ball foretelling that the general would be selected in 1996 as Ukraine's Deputy Minister of Defense, responsible for planning, scheduling and directing the rocket army's liquidation. Above all, there was nothing remotely in the general's education, experiences or long career that would allow him to foresee that he would be engaged in a massive multi-year cooperative program with the United States government to safely dismantle and liquidate the entire rocket army. These events were simply incomprehensible.

Yet in January 1991 there were indications, drawn from the recent past that the 43<sup>rd</sup> Rocket Army would be involved with U.S. military arms control treaty inspectors in the future. During these years intense, sustained diplomatic and military negotiations between the United States, the Soviet Union and European nations led to a series of major arms control treaties: Intermediate-range Nuclear Forces Treaty (1987), Conventional Armed Forces in Europe Treaty (1990), and

the soon-to-be completed Strategic Arms Reduction Treaty in July 1991. Each of these treaties mandated the elimination of weapons; each required extensive and continuously updated data on weapons, forces and locations; and each authorized the parties to send inspection teams to certify "on-site" compliance with the treaty. In the 40-year history of the Cold War, these arms control treaties were unprecedented in requiring specific arms reductions, continuous force data and on-site inspections. The Intermediate-range Nuclear Forces Treaty (INF) Treaty, signed in December 1987, entered into force seven months later in July 1988. Over the next three years the Soviet Union dismantled and eliminated 1,846 intermediate-range nuclear missiles, and the United States dismantled and eliminated 846 INF missiles. The Soviet Union sent on-site inspection teams to U.S. missile bases, depots, training sites and missile manufacturing facilities to verify compliance. The United States exercised its full INF Treaty rights, sending more than 1,200 on-site inspectors from 1988 to 1991 to monitor Soviet missile eliminations and certify compliance with the treaty's protocols.<sup>4</sup>

In 1988, as a consequence of the missile reductions required by the INF Treaty, General Mikhtyuk, then commanding the 50<sup>th</sup> Rocket Army, was directed by Headquarters, Strategic Rocket Forces to deactivate the army and eliminate all INF missiles, launchers and facilities in three missile divisions. The higher command also ordered missile reductions in the 43<sup>rd</sup> Rocket Army, directing its commander to deactivate and eliminate more than 20 missile regiments, equipped with SS-20 and SS-4 missiles.<sup>5</sup> Consequently, when General Mikhtyuk assumed command of the 43<sup>rd</sup> Rocket Army in January 1991, the general officers commanding its missile divisions and their planning staffs had been directly involved in the day-to-day work of deactivating the missile regiments. They planned and coordinated the work of weapons specialists who separated warheads from the missiles as well as supervised the regimental commanders who directed missile maintenance specialists to separate and remove SS-4 and SS-20 missiles from the launchers. Then, the regimental commanders decommissioned all the large, specially-designed military vehicles that transported, erected and launched the missiles. Once deactivated, the SS-20 and SS-4 missiles and launchers were sent, via rail, to one of five Soviet missile elimination sites: Kasputin Yar, Sarny, Jelgava, Kansk or Chita. After the missiles and vehicles left the 43<sup>rd</sup> Rocket Army's operational bases, the officers and men, as required by the treaty, dismantled each regiment's missile combat facilities, specifically launcher vehicle garages, communications cabling and missile support structures.<sup>6</sup>

Throughout this process, U.S. treaty inspection teams traveled to the 43<sup>rd</sup> Rocket Army's missile bases and launch sites and conducted on-site inspections and ascertained compliance with the treaty and its protocols. The American teams, consisting of 10 U.S. military officers, non-commissioned officers and civilian specialists, recorded "on-site" the number, type and location of every missile and launcher slated for elimination. Additional American inspection teams traveled to Soviet elimination sites at Kasputin Yar, Sarny, Jelgava, Kansk or Chita and watched as each missile and launcher was either dismantled, cut, severed, detonated or test launched. While these eliminations were underway, other American teams conducted a small number of no-notice, surprise inspections at any of the 114 INF Treaty sites located in the Soviet Union. Finally, U.S. inspectors returned to the 43<sup>rd</sup> Rocket Army's

missile bases and sites to ascertain that all buildings, cables, support structures, and missile garages had been destroyed in accordance with the treaty's protocols.<sup>7</sup>

In all, several thousand U.S. military officers and civilians went to the Soviet Union and participated in these INF Treaty arms control inspection teams. They traveled under escort, to the Strategic Rocket Forces' armies, divisions, regiments, missile sites, launch areas, weapons depots, training schools and missile manufacturing plants. They examined treaty-specific items "on-site." General Mikhtyuk recalled the impact of the treaty and the American inspectors on the 43<sup>rd</sup> Rocket Army. "Inspection procedures," he said, "stipulated by the treaty demanded unusual requirements: organization of inspector escorts by specially trained personnel, preparation for the inspector's rest, including beds, in case they wanted to stay overnight on the territory of the unit, and even provision of a telephone connection with the American Embassy in Moscow."<sup>8</sup> All these requirements, unusual for a Soviet Rocket Army, were required by the INF Treaty.



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INF Treaty inspection team in Ukraine in early 1990s

Yet, it was widely acknowledged by national and military leaders in both the Soviet Union and the United States that the next arms control treaty, START, would be even more demanding. In both nations, senior military commanders received frequent briefings on final negotiations involving the START Treaty's complex protocols and annexes. There would be new treaty requirements to provide, through detailed messages, specific and continuously updated information on the nation's strategic missile, bomber and submarine forces. Under the START Treaty, both nations would be required to deactivate and eliminate approximately half their strategic offensive systems within seven years. Both nations would

be able to verify compliance by sending on-site inspection teams to operational sites and by monitoring the sites and weapons systems using national surveillance technologies. By January 1991, every military general or admiral who commanded one of the Soviet Union's rocket armies, missile wings, bomber divisions or submarine fleets would have had his planning staffs working on the impact of the START Treaty on day-to-day operations of his command. In the same vein, virtually all the political leaders in the USSR, Europe and the U.S. were keenly aware that domestic and international public opinion supported these major arms control treaties, especially with their detailed provisions for sequenced, structured, multi-year strategic arms reductions.<sup>9</sup>

As a result, when Colonel General Mikhtyuk looked into the 43<sup>rd</sup> Rocket Army's future in January 1991, he saw two command requirements. First, the rocket army had to be certified by Headquarters, Strategic Rocket Forces in Moscow that when ordered it could complete its mission: resolving all the complex, technical and secret operational military tasks necessary to strike at their assigned targets in accordance with the national war plan. The Soviet Union relied on these rocket armies, long-range bombers and nuclear submarines equipped with ballistic missiles, for its national security and its credibility as a super power. Combat readiness dominated every aspect of the work and life of the army's commander, general officers, staff officers and men.<sup>10</sup> Second, and to a far lesser degree, the general and his senior officers had to anticipate what would happen to the rocket army when the START Treaty entered into force in future years. Like the rocket army's experience under the INF Treaty, there would be major changes required to meet all of the complex provisions in the START Treaty. Clearly, the commander's first requirement took priority: to prepare and carry out the operational mission. However, the second requirement, anticipating the impact of the new arms control treaties, would become significant during the 1990s.

### **START Treaty, coup d'état, nationalism, and new arms control initiatives**

Anticipation became reality on July 31, 1991 when George H.W. Bush and Mikhail Gorbachev signed the START Treaty in Moscow. Their signatures resolved negotiations that had lasted more than nine years. The treaty codified in international law specific obligations that the United States and the Soviet Union

had to carry out in reducing their strategic nuclear forces and weapons – the intercontinental bombers, land-based ballistic missiles and submarine-launched ballistic missiles (SLBM). At the end of the treaty's seven-year reduction period, each nation's strategic nuclear forces would be reduced from approximately 2,500 to 1,600 missile delivery systems and from approximately 10,200 to 6,000 nuclear warheads. All future strategic systems were subject to the treaty, which, once ratified and implemented would be in effect for 15 years.<sup>11</sup> "The central idea at the heart of this treaty," President Bush said at the treaty signing ceremony in the Kremlin, "can be put simply: stabilizing reductions in our nuclear forces reduce the risks of war."<sup>12</sup> Soviet President Gorbachev responded: "This completes many years of effort that required hard work and patience on the part of government leaders, diplomats and military officials. They required will, courage and the rejection of outdated perceptions of each other. They required trust."<sup>13</sup> Then, turning his attention to the future, Gorbachev concluded, "This is also a beginning; the beginning of voluntary reductions of the nuclear arsenals of the USSR and the United States, a process with unprecedented scope and objectives."<sup>14</sup>

Along with high presidential rhetoric, there was irrefutable evidence that the START Treaty did, in fact, establish a comprehensive, legally binding structure for achieving reciprocal and verifiable reductions in U.S. and USSR's strategic offensive nuclear forces. Coming at the end of the Cold War, START was the third major arms reduction treaty in four years. During the 1980s and early 1990s a strong international consensus had developed among political, diplomatic and military leaders in the Soviet Union, United States and Europe. The objective was to reduce, under verifiable arms control treaties, the strategic and conventional military arsenals amassed during the Cold War.<sup>15</sup> When U.S. Secretary of State James A. Baker testified to the U.S. Senate's Foreign Relations Committee on the START Treaty, he explained that the United States had sent its diplomats to Geneva for nine years, conducted special ministerial sessions in Geneva, Washington, Houston, and Moscow, and participated in summit meetings in Geneva (1985), Reykjavik (1986), Washington (1987), Moscow (1988), Malta (1989), and Washington (1990).<sup>16</sup> While not all of these high-level meetings or summits were devoted exclusively to nuclear arms reduction issues, they were a major agenda item at each one.

Consequently, when Bush and Gorbachev signed the START Treaty in the Kremlin in late July 1991, it was



George Bush Presidential Library

U.S. President George H.W. Bush and First Secretary Mikhail S. Gorbachev, Soviet Union sign the START I Treaty, July 31, 1991

reasonable to conclude that most of the strategic and conventional arms control agenda, with the exception of the soon-to-be completed United Nations' Chemical Weapons Treaty, had been fulfilled. This conclusion, however, was totally inaccurate. Unbeknownst to both leaders, revolutionary events would cause them to announce dramatic new strategic and tactical arms reductions in less than eight weeks. The triggering event was the sudden coup d'état against Gorbachev's government in mid-August 1991. While Gorbachev, his wife and daughter were vacationing in the Crimea, they were arrested and detained.<sup>17</sup> In Moscow, coup leaders drawn from the KGB, the General Staff and Communist Party elites moved to establish power. As they did so, sending tanks and armored vehicles into the cities to maintain order, a spontaneous counterrevolution erupted in the streets of Moscow and Leningrad. In Moscow the resistance was led by the Russian Republic's popular president Boris Yeltsin. Supported from Leningrad by Mayor Anatoly Sobchak, resistance in the streets and society grew quickly against the new government. Suddenly on August 21, the coup collapsed.<sup>18</sup> Returning to Moscow, President Gorbachev was a weakened and badly damaged leader. Nevertheless, he acted quickly. Driven by public outrage and the reformers' demands, Gorbachev shut down the Communist Party, purged the KGB and ousted senior Soviet military leaders implicated in the plot.<sup>19</sup> However, Yeltsin and the reformers,

because of their courageous resistance during the coup, held higher moral and political prominence on most national issues. Still Gorbachev, as president of the Soviet Union, retained substantial international influence, especially regarding the nation's nuclear arsenal.<sup>20</sup>

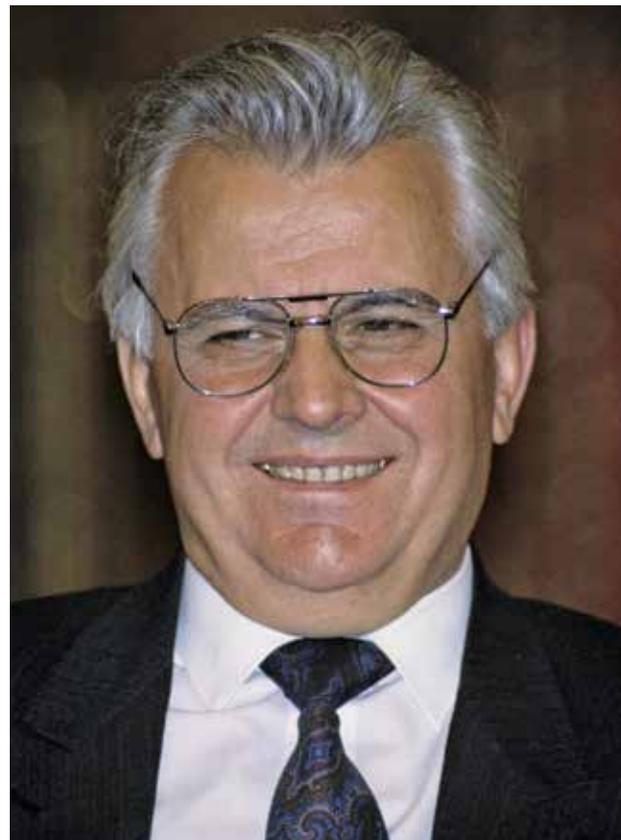
President Bush reacted cautiously to the August coup attempt, announcing that the United States government would not support or give any signal aiding coup leaders. Privately, the president encouraged resistance, telephoning Yeltsin in Moscow at a critical juncture and offering support and encouragement.<sup>21</sup> Following Gorbachev's return to Moscow, Bush called and offered support and assurances of continuity. However, once it was clear the coup had failed, President Bush and his senior advisors reassessed the situation in Moscow and the Soviet Union. It was clear that across Russia, the Baltic States and the other Soviet republics, nationalism had emerged as the driving political force. It was also apparent that many of the Soviet Union's key institutions had lost their authority: the Communist Party had supported the abortive coup, Soviet marshals and generals had joined the coup and the corrupt bureaucracy stood by ineptly. Historic forces were splintering the Soviet Union apart, yet in late August 1991 few imagined how far and fast those revolutionary forces would develop. As the world focused on Moscow, events were unfolding in Kiev, Ukraine.

Leonid Kravchuk, chairman of the Verkhovna Rada, the parliamentary body of the Ukraine Republic, called for a vote on a declaration of independence.<sup>22</sup> Within the Soviet Union, Ukraine was a major economic, military and political component. The republic's 52 million people provided the USSR with 40 percent of its manufacturing output and 30 percent of its agricultural products. Ukraine's military design bureaus and military production facilities produced some of the Soviet Union's most advanced strategic weapons. Across Ukraine nationalism was rising, but few knew its extent. Apparently, the abortive coup in Moscow served as the tipping event. In late August 1991, just three days after the coup had failed in Moscow and Leningrad, Kravchuk called for a parliamentary vote on independence. The parliamentarians voted overwhelmingly for Ukraine's independence, 321 to 2.<sup>23</sup> Further, they voted to hold a national referendum and presidential elections throughout Ukraine on December 1, 1991. Continuing their revolutionary votes that August day, the parliament passed a bill establishing a legal and administrative structure for the new nation. In a special resolution "On Military Formations in Ukraine," it established Ukraine's Ministry of Defense.<sup>24</sup>

At that moment, all the military forces stationed on the territory of Ukraine – all 750,000 officers, soldiers, sailors, aviators and defense workers – were serving in the Soviet Military Forces.<sup>25</sup> Consequently, when Kravchuk convened a late August meeting in Kiev of senior military officers, he invited the senior generals commanding the three Soviet military districts in Ukraine, the admiral in charge of the Black Sea Fleet and the Soviet generals commanding the strategic rocket army, air armies, civil defense forces and railroad troops.<sup>26</sup> General Vladimir Lobov, Chief of the General Staff of the USSR, flew to Kiev from Moscow to participate in the meeting. Kravchuk explained to the assembled generals and admiral that the Ukrainian parliament's declaration of independence, its scheduling of the December national referendum and its vote to establish a Ukraine MOD, meant that as Chairman, he wanted to meet with them and discuss the role of the military in a new, independent Ukraine. 12 generals spoke; all but one rejected the concept of independence, citing the centralized Soviet military system as evidence of the impossibility of dissolving the Soviet Union. When General Mikhtyuk, Commander, 43<sup>rd</sup> Rocket Army, spoke, he took the position that the rocket army, with its ICBMs, was part of the Soviet Union's Strategic Rocket Forces

and "could not be included in the Ukrainian Armed Forces." At the time, Kravchuk agreed. Only one general, Kostiantyn P. Morozov, Commander of the 17<sup>th</sup> Air Army, supported independence. Morozov spoke out about the need for a new constitution to ensure civilian control over the military.<sup>27</sup> As the session ended, Kravchuk reaffirmed the Ukrainian parliament's commitment to democracy and independence, asking the general officers to continue consultations in future months.<sup>28</sup>

Ukraine was not the only Soviet republic voting on declarations of independence from the Soviet Union. Three days after the Ukrainian parliament acted, the Belarusian and Moldovan parliaments also voted to declare their independence from the Soviet Union. Then just three days afterward, Azerbaijan's parliament, meeting in Baku, voted for independence. The following day, parliaments in Uzbekistan and Kyrgyzstan voted to declare independence, each authorizing a popular referendum on the question later in the fall. Parliamentary votes for independence in Tajikistan and Armenia followed in September. Even before



Ukrainian President Leonid Kravchuk

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Ukraine acted, the four Baltic republics, Lithuania, Latvia, Georgia and Estonia, had declared “full” independence from the Soviet Union.<sup>29</sup>

These revolutionary events influenced the policy debate in the United States. In early September, only two weeks after the coup had failed in Moscow, President Bush convened a meeting of the National Security Council (NSC) to discuss future relations with the Soviet Union and the possibility of further reductions in strategic and tactical forces and their weapons.<sup>30</sup> The president went over the new situation



Brent Scowcroft, Richard B. Cheney and George H.W. Bush (l.-r.)

with Secretaries of Defense and State, Chairman of the Joint Chiefs of Staff, Director of the CIA and the National Security Advisor. The overriding issue was the possibility that amidst the rise of revolutionary nationalist sentiments across the Soviet republics, the Soviet Union would dissolve as a nation. Virtually everyone, including Bush, thought dissolution would occur. Secretary of Defense Richard B. Cheney advocated an “aggressive” approach in engaging the new republics and Russia in future relations. The center was failing, he declared, the United States had to shape its policies around new realities.<sup>31</sup> Brent Scowcroft, National Security Advisor, and Secretary of State James A. Baker advocated that the president and administration should adopt a series of general principles that would guide U.S. policy through the likely forthcoming crises in the Soviet Union.

What were those principles? Scowcroft and Baker thought the U.S. should insist on self-determination through democratic methods, adherence to existing borders, respect

for democracy, rule of law and basic human rights. These five principles had worked well in guiding U.S. policy during the revolutions in Central and Eastern Europe in 1989 and 1990. Now, they added two points that focused on the Soviet Union’s nuclear arsenal: advocating “adherence to international law and the USSR’s existing treaty obligations,” and “central control over nuclear weapons and safeguards against internal or external proliferation.”<sup>32</sup> When this NSC meeting ended, President Bush told his senior advisors that he wanted the United States to take the lead in all future arms control reduction proposals. He asked them to work with their senior staffs and military service chiefs over the next several weeks to develop specific proposals for further reductions in U.S. tactical and strategic nuclear weapons. The president said he wanted to reduce the number of nuclear weapons well below levels in the START and INF treaties. When they returned to the Pentagon, Secretary Cheney and General Colin L. Powell, Chairman of the JCS, and their staffs developed “sweeping” proposals for eliminating U.S. tactical nuclear weapons, and for reducing strategic nuclear forces and their nuclear weapons.<sup>33</sup>

Three weeks later, on September 27, 1991, President Bush addressed the nation via television from the White House, declaring the United States would unilaterally eliminate 2,150 land-based tactical nuclear weapons deployed in short-range missiles and artillery shells. It would withdraw 700 air-launched tactical nuclear weapons and 2,175 sea-based nuclear cruise missiles. In its strategic nuclear forces, the U.S. would remove from alert status all of its 280 heavy long-range bombers, 450 Minuteman II missiles, and 160 Poseidon SLBMs. At the same time, Bush cancelled U.S. plans for the rail-mobile Peacekeeper system, the road-mobile Midgetman missile and the advanced version of the short-range attack missile.<sup>34</sup> After he left office, Bush wrote that these declarations signaled “the broadest and most comprehensive change in U.S. nuclear strategy since the early 1950s.”<sup>35</sup>

As was customary, President Bush telephoned Gorbachev a few days prior to the public announcement. Gorbachev indicated he would make a reciprocal declaration within a few days. In early October, he spoke to the Soviet public and the world announcing the Soviet Union would unilaterally eliminate up to 10,000 tactical nuclear warheads deployed on short-range missiles and long-range artillery shells. Furthermore, the Soviet Navy would withdraw all of its 2,000 sea-based tactical nuclear weapons; and the

Strategic Rocket Forces would immediately stand down 503 ICBMs. The Soviet Air Force would ground all of its heavy bombers.<sup>36</sup> In addition, he declared the SRF would restrict to its garrison all of its SS-24 rail mobile missiles. It would also cancel programs for all new SS-24 and SS-25 missiles, and the Soviet design bureaus would terminate programs for new short-range attack missiles and new heavy bombers. Moreover, he decreed a unilateral cessation of all underground nuclear testing, and he agreed to continue discussions with American officials on the Strategic Defense Initiative. Finally, he ordered a reduction in Soviet troop strength from 3.7 to 3 million.<sup>37</sup>

By all accounts in any year, or even any decade, during the Cold War these presidential declarations represented significant unilateral strategic and tactical arms reductions.<sup>38</sup> They exerted a powerful influence on the emerging nations of the fragmenting Soviet Union. These nations would almost certainly inherit some strategic nuclear forces, given the location of the USSR's fixed ICBM missile silos, long-range bomber air fields and nuclear submarine bases. Just days before President Bush's announcement, Leonid Kravchuk visited Washington to meet with the president in the White House. Kravchuk reiterated Ukraine's drive for total independence. Bush, ever cautious, responded that the United States still had formal relations with the Soviet Union and could not recognize Ukraine as a nation. In the other emerging states, Kazakhstan and Belarus, national leaders were discussing in their national parliaments the future of these strategic forces. Even in the U.S. Congress, then considering military appropriations bills for 1992, key legislators began debating if they should set aside any funds to assist the new nations in meeting their treaty obligations and reducing weapons systems.<sup>39</sup> An underlying assumption in the two presidents' dramatic declarations in the fall of 1991 was that further arms reductions would be forthcoming, provided the process continued peacefully. Since one presidential announcement was countered within a week by a similar announcement, the process became reciprocal and it created a climate for further reductions. The temper of the times was running powerfully toward strategic and tactical nuclear arms reductions.<sup>40</sup> Few missed it.

Ukraine became one of the first Soviet republics to state its position on nuclear weapons. In late October 1991 the Ukrainian parliament adopted a declaration "On the Nuclear Status of Ukraine," which stated that nuclear weapons based

on its territory were temporary and that Ukraine intended to pursue a course toward complete elimination of nuclear weapons and components from its territory.<sup>41</sup> It insisted on adequate guarantees for ecological security. Further, the Ukrainian parliamentarians pledged to follow the terms of the 1991 START Treaty, and to sign and ratify the Non-Proliferation (NPT) Treaty as a non-nuclear state. Ukraine was ready, the Rada declared, to begin negotiations with Belarus, Kazakhstan and the Russian Federation on the proper command structures needed for eliminating nuclear



George Bush Presidential Library

President George H.W. Bush

weapons under the START Treaty. In an important clause, the parliamentarians stated that "Ukraine insists on the right of control over the non-use of nuclear weapons located on its territory."<sup>42</sup> In subsequent years this policy declaration on nuclear weapons, which was taken before Ukraine became a nation, would become an important benchmark for the Ukrainian government and its parliament.

## **Collapse, national inheritance, and the future of the nuclear forces**

The forces propelling Ukraine and the other nations towards independence moved swiftly in October and November toward the December 1 referendum.<sup>43</sup> In Ukraine, every major party favored independence. All of Ukraine's national politicians, regional leaders and minority groups, except one, supported independence. In the actual referendum vote, more than 90 percent of Ukrainians chose independence. The same day, voters elected Leonid Kravchuk as Ukraine's first president. It was a revolutionary

time and Kravchuk moved swiftly to ensure Ukraine's independence, traveling to Minsk to meet with Boris Yeltsin, president of Russia and Stanislav Shushkevich, president of Belarus. There, after a weekend of secret meetings, the three presidents announced in a joint declaration that the Union Treaty of 1922, which established the Soviet Union, had been abolished and that they were forming a new federation, the Commonwealth of Independent States (CIS). This joint declaration, the Minsk Agreement of December 1991 sealed the fate of Gorbachev and the Soviet Union.<sup>44</sup>

Disregarding the fact that the three presidents had no authority to dissolve the Soviet Union, the leaders of five other new nations confirmed their actions one week later. Meeting in Ashkhabad, the presidents of Kazakhstan, Turkmenistan, Tajikistan and Uzbekistan declared their support for dissolution and stated they would participate in the new Commonwealth of Independent States. They insisted on being designated as co-founders with Russia, Ukraine and Belarus of the new commonwealth. The following week, the presidents of the 15 new nations formed from the collapsing Soviet Union, except for Estonia, Latvia, Lithuania and Georgia, traveled to Almaty, Kazakhstan. There in late December, they unanimously established the Commonwealth of Independent States and declared that the Union of Soviet Socialist Republics would cease to exist at midnight, January 1, 1992.<sup>45</sup>

These decisions and declarations came so quickly that few realized their profound consequences. The Soviet Union had been a highly centralized state, with its administrative bureaus, foreign ministry, state planning agencies, economic bureaus, military headquarters and general staffs all based in Moscow.<sup>46</sup> Over its 70-year existence, the Soviet Union had signed more than 1,000 treaties and international agreements.<sup>47</sup> The nation's nuclear arsenal was the world's largest, with an estimated 12,000 strategic nuclear weapons and 15,000 tactical nuclear weapons. It retained the world's most substantial stockpile of chemical weapons, an estimated 44,000 tons, along with a secret complex of biological weapons laboratories and manufacturing plants. It had one of the world's most extensive armed forces, with nearly 3.7 million men under arms.<sup>48</sup> Soviet ground forces, with more than 200 divisions, were deployed in every one of the former Soviet republics. Its military industrial system was exceptionally centralized, with planning, programs and production based on directives from military

design bureaus in Moscow and Leningrad. The military's command and control system, especially for the Strategic Rocket Forces, was centralized in the Soviet capital. The rocket forces command structure was stable, but the Soviet General Staff was in turmoil. Its senior leaders had been disgraced during the failed August coup and were subsequently replaced. Then in the fall months of 1991, the new military leaders had equivocated in supporting Gorbachev over Yeltsin and in favoring a Soviet versus a new Russian state. The General Staff's commanders and senior planning staff had been involved for more than three years in the decommissioning and relocation of more than 650,000 military forces, officers, men and their families, formerly stationed in Eastern Europe.<sup>49</sup> Now in December 1991 the Soviet marshals and generals had to deal with the sudden, actual dissolution of their nation and the prospect of dividing its centralized, unitary military commands and forces across fifteen separate states.

Political leaders guiding the dissolution took up the most pressing question; who would control the new nations' "inherited" strategic nuclear forces. In Minsk, Yeltsin of Russia, Kravchuk of Ukraine and Shushkevich of Belarus had declared "member states of the community will preserve and maintain under a united command a common military - strategic space, including unified control over nuclear weapons..." Jointly, the three presidents stated they would provide the necessary conditions, specifically funding, for the stationing and functioning (operations) of strategic armed forces located on their national territories. Finally, the three presidents concluded they would develop a "harmonized" policy on questions of social protection and pension provisions for the servicemen and their families.<sup>50</sup> Following the Minsk meeting and agreement, Yeltsin asserted that Russia would become the Soviet Union's successor state in international law. It would inherit three-fourths of the USSR's nuclear arsenal. Consequently, Russia would have control of the Strategic Rocket Forces' command structure, custody of most of the nuclear weapons and control of the nuclear infrastructure ministries that provided basic research, science and development of the weapons. Specifically, Russia would inherit more than 1,000 ICBMs, 101 long-range bombers, and 940 SLBMs. The new Russian state would possess more than 7,450 strategic nuclear warheads and approximately 15-20,000 non-strategic nuclear warheads.<sup>51</sup>



Inherited Weapons of Mass Destruction sites, 1992

Table 1-1. Former Soviet Union Strategic Nuclear Forces<sup>56</sup>

Country	Weapons	Warheads
Russia	ICBMs - 1,064	4,278
	Bombers - 101	367
	SLBMs - 940	2,804
Ukraine	ICBMs - 176	1,240
	Bombers - 44	628
Kazakhstan	ICBMs - 104	1,040
	Bombers - 40	320
Belarus	ICBMs - 81	81

Source: International Institute for Strategic Studies, January 1992

Within its borders, Ukraine had the 43<sup>rd</sup> Rocket Army, with 130 SS-19 ICBMs (6 warheads per missile) and 46 SS-24 ICBMs (10 warheads per missile). The 43<sup>rd</sup> Rocket Army had a nuclear weapons storage depot, located at Pervomaysk. Also on Ukrainian territory was the 106<sup>th</sup> Heavy Bomber Division, with 25 Bear H-16 long-range strategic bombers, each equipped with 16 warheads mounted on air-launched cruise missiles and, and 19 Blackjack bombers, each equipped with 12 nuclear-tipped cruise missiles. The combined rocket and air armies based in Ukrainian territory had more than 1,300 strategic nuclear warheads.<sup>52</sup> In addition, Soviet military divisions in Ukraine had approximately 4,200 non-strategic or tactical nuclear weapons.<sup>53</sup> Kazakhstan inherited four missile bases, sites for 104 SS-18 ICBMs, each capable of launching 10 nuclear warheads. Kazakhstan also had bases for 40 nuclear-capable long-range bombers. All in all, the new nation had inherited from the Soviet Union, strategic offensive forces equipped with more than 1,400 nuclear warheads.<sup>54</sup> Belarus

had a much smaller force, three regiments of single-warhead SS-25 ICBMs, with 81 nuclear weapons.<sup>55</sup>

The term “inherited” was a critical one. In December 1991, the old Soviet territorial definitions of federations, republics, and oblasts had been discarded and replaced by that of independent nations and states. This change had enormous consequences. In international law, independent, internationally recognized nations “possessed” everything within their territorial borders. Except for the former Soviet Union’s nuclear forces and weapons, the classical legal definition applied to the new nation’s “inherited” military forces, and its industrial complexes, peoples, places and lands. However, in December 1991, this international legal principle was not clear, so two weeks after the Minsk meeting, the three national leaders along with nine presidents of the other emerging states met in Almaty, Kazakhstan to negotiate and sign a new declaration clarifying the Commonwealth of Independent States. This Almaty Declaration was far more explicit in defining the new commonwealth and more specific in outlining the command and control system for nuclear weapons.<sup>57</sup> Two concepts in international law emerged as prominent principles. First, there would be international

recognition in law for those emerging states choosing to renounce their inherited nuclear weapons. Second, the states that had signed ratified and implemented existing arms control treaties and agreements would be recognized as contributing to international stability. International recognition and support, especially from the United States and European nations, were closely associated with these principles.

The presidents of four new states, Russia, Belarus, Kazakhstan and Ukraine, which had inherited nuclear weapons – Boris Yeltsin, Stanislav Shushkevich, Nursultan Nazarbayev and Leonid Kravchuk, signed a new declaration in Almaty: “An Agreement on Joint Measures on Nuclear Weapons.”<sup>58</sup> In brief, they agreed that:

- Nuclear weapons and the strategic armed forces existed for the collective security of the CIS
- There would be “No First Use” of nuclear weapons
- The President of Russia would have operational control, i.e. control of the “launch button” for the CIS’s strategic armed forces, but this control had to be carried out with “agreement” by the heads of the member states



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Ukrainian President Leonid Kravchuk, Kazakh President Nursultan Nazarbayev, Russian President Boris Yeltsin and Speaker of Belarusian Supreme Soviet Parliament Stanislav Shushkevich (l.-r.)

- Belarus and Ukraine would join the NPT as non-nuclear states and abide by all of the treaty's terms
- Belarus, Ukraine and Kazakhstan could transfer nuclear weapons to Russia for the purpose of destroying them
- By July 1, 1992, Belarus, Ukraine and Kazakhstan would ensure withdrawal of tactical nuclear weapons to "central factory premises" (in Russia) for dismantling under "joint supervision"
- The presidents of Russia, Belarus, Kazakhstan and Ukraine would sign and submit the START Treaty to the legislatures for ratification

For international observers of the dissolving Soviet Union, here was a clear, concise, collective declaratory policy. For the new Commonwealth of Independent States, it stated directly the purpose for maintaining operational strategic nuclear forces, lines of authority for establishing command and control, future intentions of two of the four states inheriting nuclear weapons, and the collective decision to endorse the dominant strategic arms control treaty, the START Treaty. Specifically, Yeltsin, Kravchuk, Shushkevich and Nazarbayev, declared that their strategic nuclear forces -- ICBMs, SLBMs, and heavy bombers, would constitute "collective security" for the new Commonwealth. Yeltsin, with consultation, would have control over the "button." Excess tactical and strategic nuclear weapons would be sent to Russia for elimination.

## U.S. response: strategic diplomacy in revolutionary times

Ever since the failed August 1991 coup against Gorbachev, President Bush and his senior advisors had reshaped U.S. policies toward the changing situation in the waning Soviet Union.<sup>59</sup> In early September, Secretary Baker announced the principles that would guide U.S. policy: the right to peaceful self-determination, respect for national boundaries, support for democratic government and the rule of law, support for constitutional guarantees for human rights, and adherence to international law and treaty obligations.<sup>60</sup> Then in late September, President Bush announced to a world audience via television that he had ordered U.S. military services to eliminate thousands of tactical nuclear weapons and cancel dozens of strategic nuclear modernization programs. Within

days, President Gorbachev announced an initiative to cut and curtail Soviet nuclear weapons systems and thousands of nuclear weapons. In the Soviet Union the twin forces of nationalism and internal dissolution moved forward rapidly in October and November. During these weeks and months, President Bush insisted that the U.S. policy would be one of non-interference in the internal affairs on the Soviet Union.<sup>61</sup> For this policy to succeed, the USSR would have to remain intact. If it collapsed, U.S. interests, principles and leadership in the region would be forced to change dramatically.

As the Soviet Union continued to unravel in the days following the Minsk Declaration in mid-December, Secretary of State James Baker and a small cadre of senior diplomats flew to Moscow for a series of meetings. When they landed on December 15, they found the city in a state of crisis: no gas, intermittent electricity, hoarding of food, rampant inflation, an absence of governmental authority and a sense of revolution in the air. Baker had many questions: Just what was this new Commonwealth of Independent States? Had the emerging states clarified the nuclear command and control issue? What about non-proliferation? Would the new leaders of Russia sign and ratify the START Treaty? Would they accept a multinational U.S.-led humanitarian aid effort that winter? Some officials in Baker's party were uncertain if Russia and the new states would be successful in dissolving the rigid, centralized Soviet state. In his meeting with Baker and the American diplomats, Yeltsin changed their impressions immediately. He told Baker that the CIS, in its next meeting scheduled for the following week in Almaty, would be expanding from three to eight states, with incorporation of five new Central Asian nations. He declared the Russian government would assume in the next few weeks the USSR's Foreign Ministry, foreign embassies, United Nations' seat on the Security Council, Interior Ministry and parts of the KGB. Baker was stunned. This meant that the United States would have to recognize Russia as the Soviet Union's successor state.<sup>62</sup>

On the spot, Baker sought Yeltsin's assurance on a series of issues vital to the United States. Specifically, he asked the Russian president to declare publicly that he would work with the presidents of the other republics on five key issues: command and control of nuclear forces and weapons, safe storage of nuclear weapons, safe dismantlement and transport of nuclear weapons, limiting nuclear proliferation, and securing quick ratification of the START and CFE arms control treaties. "I wanted to establish a standard," Baker

recalled in his memoirs, “to which we could hold them in the future.”<sup>63</sup> Yeltsin discussed each issue, beginning with command and control of nuclear weapons. Then, he introduced General Yevgeny Shaposhnikov, Soviet Minister of Defense, who would be commanding the Commonwealth of Independent States’ nuclear forces. General Shaposhnikov explained the existing system’s command and control and how it would be modified to the new CIS command structure. He told Baker they expected the new organization



U.S. Secretary of State James A. Baker and Russian President Boris Yeltsin

to be a “defensive alliance,” like the North Atlantic Treaty Organization, where aggression against one would be aggression against all.

Addressing Baker’s other questions, Yeltsin declared that Russia, Belarus, Ukraine and Kazakhstan would each sign and ratify the NPT Treaty. He expected that Ukraine, Belarus and Kazakhstan would give up the nuclear weapons on their territory and become non-nuclear states. Yeltsin then stated the Russian government would implement strict export controls for nuclear weapons and nuclear technologies. For the American Secretary of State, these explanations and answers fit closely with U.S. policy objectives. “I personally felt very reassured,” Baker recalled, “I have heard nothing that causes me any concern.”<sup>64</sup>

From Moscow, Baker flew to Kyrgyzstan, Kazakhstan, Belarus and Ukraine. At each stop, he met with the new nations’ presidents, discussing U.S. recognition, cooperation, humanitarian aid and technical assistance. He was welcomed eagerly, in large part to the United States’ excellent reputation in the region – morally, economically, politically and militarily. When he arrived in Kazakhstan in mid-December,

Baker met with President Nazarbayev who told him his nation would join the NPT Treaty. “If the international community recognizes and accepts Kazakhstan,” Nazarbayev said, “we will declare as a non-nuclear state. This is the best way our territorial integrity will be assured. That’s what we require.”<sup>65</sup> The next day in Minsk, Belarus, Baker met with President Shushkevich who assured him that having experienced the trauma of Chernobyl, his country wanted to get rid of every nuclear weapon stationed on its territory. He said Belarus would sign and ratify the NPT Treaty. Then Shushkevich asked Baker for U.S. expertise in disabling and dismantling nuclear weapons within Belarus.<sup>66</sup>

That evening Baker flew to Kiev. Over dinner, President Kravchuk confirmed his support for the new CIS command structure. He said Ukraine was not only prepared to join the NPT Treaty, but that the government had already invited United Nations inspectors and the International Atomic Energy Agency to meet and discuss compliance agreements. Kravchuk told Baker that Ukraine would abide by all nuclear agreements and treaties and that it would welcome U.S. expertise to assist in the safe, secure, storage, transfer and liquidation of nuclear forces and weapons on its territory. Baker later wrote in his memoirs, “Following my evening in Kiev, I was more confident than I had been earlier in the week (in Moscow) that political disputes could be contained.”<sup>67</sup> Baker’s confidence was borne out the following week in Almaty, Kazakhstan. There the four presidents of the nuclear states – Yeltsin, Shushkevich, Nazarbayev and Kravchuk, met in late December and signed the “Agreement on Joint Measures on Nuclear Weapons.” In Washington, Secretary Baker and President Bush followed events closely to see if declaratory policy fit with diplomatic statements and private discussions. They did. As a direct consequence, the United States government began formal procedures to recognize these new nations and their governments. Baker announced in early January 1992 that the United States would have ambassadors, staffs and embassies established in each capital quickly.<sup>68</sup>

Following the announcement, Baker sent a message to each president inviting foreign ministers of the 15 newly independent states to a major conference, the North American Cooperative Council, to be held at NATO Headquarters in early January 1992. All accepted. Sitting in a hall normally reserved for NATO senior representatives, the new nations’ foreign ministers were welcomed by Secretary Baker, foreign ministers of the NATO nations and representatives of the new

Central European nations. This symbolic meeting also had a serious agenda. Alliance leaders wanted the foreign ministers of the Commonwealth of Independent States' nations to sign, ratify and implement the CFE Treaty. Originally signed in October 1990 by the leaders of NATO and Warsaw Pact nations, the CFE Treaty would now be expanded by incorporating the 15 new independent states. To do so would mean that the Soviet Union's huge conventional military forces, with 200 army divisions, air divisions, naval fleets and more than 3.7 million men would have to be apportioned among the 15 new nations. If and when they ratified the CFE Treaty, new states would be required to meet all the former Soviet Union's quotas for reducing conventional weapons as specified in the treaty. Division of these massive conventional forces was a huge task for the new states; it took months of negotiations to develop a formula acceptable to all.<sup>69</sup>

In a third diplomatic initiative in January 1992, Secretary Baker invited the leaders of the new states and other nations to send representatives to Washington, D.C. to participate in a large multinational humanitarian aid conference. News reports told of a breakdown of food distribution, threats of famine and civic unrest in the cities and towns across the former Soviet Union. Recalling the famine-like situation

in Europe following the end of World War II, the American Secretary of State hosted the large multi-national conference at the U.S. State Department. There, Baker announced to the 600 delegates from 54 nations that the United States would organize and lead a large humanitarian airlift, called Provide Hope, to deliver aid directly to the people of the emerging states in their need for food, medicine, and emergency supplies.<sup>70</sup>

All this diplomatic activity evidenced a dramatic turn in American response to the revolutions sweeping across the former Soviet Union. In less than six weeks, Baker had forged an extraordinarily active American foreign policy with the new, emerging states. At its very center lay U.S. recognition for the new nation states. Next, the U.S. advocated strongly for the new states' incorporation into the international system of treaties, agreements and organizations. Finally, the United States led the world in organizing the multinational humanitarian aid program, known in the winter of 1991-1992 as Provide Hope. Always present throughout all of these initiatives, were the Bush Administration's geostrategic concerns about the former Soviet Union's nuclear weapons – their command, control, security, safety, dismantlement and liquidization. Yet there was more to the nuclear question



Defense Threat Reduction Agency

Presidents and Foreign Ministers of NATO nations, Central European nations and CIS nations meet at NATO headquarters, March 1992



Office of Senator Richard Lugar

Senators Sam Nunn (l.) and Richard G. Lugar (r.) leaving the White House

than weapons. The Bush Administration had to consider the thousands of nuclear scientists, secret nuclear cities and laboratories, nuclear production facilities, missile assembly factories, nuclear submarine yards, bomber plants and the hundreds, if not thousands, of ancillary factories and firms. During the Cold War, the Soviet Union had created and sustained a nuclear arms complex that was so vast that few realized its scope and complexity. Senators Sam Nunn of Georgia, a Democrat, and Richard G. Lugar of Indiana, a Republican, sought to address this issue. In the fall 1991, they studied the issue extensively, held hearings and drafted legislation that gave the United States the legal and financial framework needed to develop a cooperative program to provide assistance in dealing with the many issues associated with “inherited” nuclear weapons.

### **A new strategic initiative: Nunn-Lugar legislation**

The Nunn-Lugar legislation of 1991 established a major new U.S. government assistance program for the newly independent states. The initial legislation provided \$400 million for the safe transportation, storage, accounting,

and destruction of nuclear and other weapons in the Soviet Union. Adopted by the U.S. Senate 84 to 6, and by the House of Representatives on a voice vote, the legislation was signed into law by President Bush on December 12, 1991.<sup>71</sup> Two weeks later the Soviet Union dissolved. Four of the successor states, Russia, Belarus, Kazakhstan and Ukraine inherited all of the USSR’s nuclear forces, weapons and warheads. The Nunn-Lugar legislation was prescient, especially since in the decade that followed, the U.S. Congress reaffirmed, expanded, modified and reenacted the program annually. Known initially as the Nunn-Lugar legislation, and then after 1995 as Cooperative Threat Reduction (CTR), the program continued beyond the 1990s into subsequent decades.

What caused Nunn and Lugar to propose this U.S. assistance, even before the dissolution of the Soviet Union? Senator Nunn answered this question on numerous occasions.<sup>72</sup> Serving as Chairman of the Senate Armed Services Committee, Nunn had followed the revolutionary events of the summer of 1991 closely: the abortive coup in August, parliamentary declarations for independence across the length and breadth of the Soviet Union in August and September, and intense preparations within the military services and defense agencies preceding President Bush’s



National Archives - Still Picture Branch

Ashton B. Carter

dramatic unilateral announcement to withdraw, cancel and dismantle thousands of U.S. tactical nuclear weapons and systems. In this context, Nunn recalled that he and Lugar invited 20 key senators to a breakfast meeting in late November. The topic was the Soviet Union and safety of its nuclear weapons. Nunn introduced Ashton Carter, co-author of a new study at Harvard University, *Soviet Nuclear Fission: Control of the Nuclear Arsenal in a Disintegrating Soviet Union*.<sup>73</sup>

Carter, a theoretical nuclear physicist and international security analyst, briefed the senators, beginning with the study group's analysis of the Soviet Union's vast nuclear weapons arsenal. One must, he explained, look beyond the nuclear weapons themselves and examine the USSR's entire complex of systems: nuclear weapons laboratories and the scientists working in the "closed" cities, specialized military transportation systems for moving the warheads from operational sites to special storage depots, complex maintenance systems for insuring the safety of nuclear warheads, the structure of the weapons manufacturing system and the complex centralized command and control system for monitoring, accounting for and launching the weapons. There were an estimated 27,000 strategic and tactical nuclear weapons in the Soviet Union. If the Soviet

Union broke apart, Carter concluded, it would pose the greatest nonproliferation problem since the beginning of the atomic age. He and his team of analysts suggested that the Senators examine a set of key policy recommendations.<sup>74</sup>

Two assumptions underlay these recommendations. First, if and when the Soviet Union dissolved, they assumed that Russia would be the only successor state that possessed within its borders the "technical means" required to carry out full-cycle security, maintenance, safety and monitoring operations of the nuclear weapons complex to current world safety and security standards. None of the other potential nuclear states, Belarus, Kazakhstan, Ukraine, had that technical capacity. Second, the United States and the Soviet Union had developed during the Cold War a special relationship as nuclear superpowers. That relationship, particularly in the 1970s and 1980s, had led to major stabilizing bilateral nuclear arms control treaties and agreements that, when implemented, would provide an important international structure for carrying out arms reductions in future years. This long-term bilateral, superpower relationship, Carter stressed, was one that no other nation had with the Soviet Union.

Combining the two assumptions – the possibility of serious disruptions in the Soviet Union's nuclear weapons systems for safeguarding and securing the vast nuclear weapons complexes, with the reality of the United States' long-standing special relationship – Carter recommended that the U.S. Senate consider funding technical assistance to the Soviet Union. Specifically, he recommended assistance for the rapid and safe transport of warheads, for disassembly and elimination of weapons, and for the safe and secure storage of weapons and special nuclear materials.<sup>75</sup> Later, Senator Nunn recalled that this important briefing "outlined in an analytical, scholarly format the dangers of nuclear command, control and safety in an unstable Soviet Union."<sup>76</sup> Nunn credited it as the major conceptual foundation for the Nunn-Lugar legislation.

Following that Senate breakfast meeting in early November, world events continued to favor the forces of nationalism in the splintering Soviet empire. One week later, Senators Nunn and Lugar, along with 24 co-sponsors, succeeded in persuading both houses of Congress to pass a specific bill: the Soviet Nuclear Threat Reduction Act of 1991.<sup>77</sup> It authorized the Department of Defense to transfer, through reprogramming, up to \$400 million annually from other accounts in the department's operating budget

to implement the act. The authority was discretionary, not obligatory. The act began by stating that “The Congress finds that Soviet President Gorbachev has requested Western help in dismantling nuclear weapons, and (that) President Bush has proposed United States cooperation on the storage, transportation, dismantling and destruction of Soviet nuclear weapons.”<sup>78</sup> It further stated that “profound” changes were underway in the Soviet Union, and that there were three types of dangers to nuclear safety and stability. First, the distribution of nuclear weapons to the new states had created a new international danger if these states could not safely maintain and store the weapons at the rigorous technical standards needed for international stability. Second, there was a danger of seizure, theft, sale or use of nuclear weapons or components. Third, there was a danger of proliferation if the weapons, weapons components or knowledge were transferred outside of the Soviet Union or its successor states. Finally, congressional findings concluded with the declaration, “that it is the interests of the United States (A) to facilitate on a priority basis the transportation, storage, safeguarding and destruction of nuclear and other weapons in the Soviet Union, its republics and any successor entities, and (B) to assist in the prevention of weapons proliferation.”<sup>79</sup>

In defining the program, Congress directed the President to establish within the Department of Defense a program based on the principle of “cooperation.” It limited the program to three specific areas of assistance: destruction of nuclear weapons, chemical weapons and other weapons; the transport, storage, disablement and safeguarding of these weapons in connection with their destruction; and establishment of verifiable safeguards against proliferation of such weapons. Further, Congress told the President that cooperation “may” involve assistance in planning and in resolving technical problems with destruction of the weapons or their proliferation. Finally, it directed that to the “extent feasible” the program should use U.S. technology and technicians. This clause emphasized the “Buy American” aspect of the law.<sup>80</sup>

From the beginning, cooperation with the Soviet Union and its successor was a key legislative objective. At the time, few realized how important this objective of “cooperation” would become between the governments of the United States and the newly independent states. As events unfolded in the 1990s, the dominant U.S. national security and foreign

policy objective for the region became nonproliferation. U.S. assistance, in the form of the Nunn-Lugar program, became the most significant instrument in the U.S. foreign and defense policies for achieving this objective. Cooperation between governments and bureaucracies became a means to an end. The end, however, was far from certain in early 1992. Just as American officials in the NSC and DOD began to define the program, there were huge uncertainties in the missile fields.

## Reality

One uncertainty concerned the new Commonwealth of Independent States’ Armed Forces, itself. Established only weeks earlier, this joint nuclear force had no commander, no staff, no command and control center, and no plans for partitioning the former USSR’s forces and weapons. These CIS Armed Forces existed as declaratory policy only. At the 43<sup>rd</sup> Rocket Army Headquarters in Vinnitsa, Ukraine, General Mikhtyuk recalled that these declarations changed none of the “routine, day-to-day work” of the 35,000 men assigned to the rocket army.<sup>81</sup> In Kazakhstan, commanders of the 31<sup>st</sup> Missile Army, headquartered at Derzhavinsk, and the 33<sup>rd</sup> Guards Missile Army, at Zhangiztobe, retained their allegiance to the Strategic Rocket Forces in Moscow. In Ukraine, another uncertainty emerged as some ultranationalist members in the Ukrainian parliament began advocating that the new nation retain all of its “inherited” nuclear weapons and strategic forces.<sup>82</sup> Even before independence, Ukraine’s parliament had asserted its sovereignty rights to “control over the non-use of nuclear weapons on its territory.”<sup>83</sup>

Then in January 1992 General Morozov, Ukraine’s first Minister of Defense took over the headquarters of the Soviet Kiev Military District, shutting down the communication lines linking Kiev to Moscow and dismissing the commanders of the three Soviet Military districts in Ukraine. The following week, Morozov began administering the oath of loyalty to the Ukraine nation to the first of 750,000 military officers and men.<sup>84</sup> As a result, for many Ukrainians, reality did not lay in grand policy declarations promulgated in Washington, Moscow, Minsk or Almaty, but in the direct actions of the nation’s new political and military leaders. In the midst of creating a new nation and dismantling an old empire, reality was shifting constantly.

## Endnotes

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<sup>1</sup> Report, General-Colonel Volodomir Alexeyevich Mikhtyuk, Commander, 43<sup>rd</sup> Rocket Army, Strategic Rocket Forces, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," 2003. See also, Report, Headquarters, 43<sup>rd</sup> Rocket Army, Vinnitsa, Ukraine, 2000. The estimated size of the nuclear arsenals of the three nations in 1991 were: Great Britain (96), France (436), and China (324). See also, Richard Fieldhouse, Robert S. Norris, and William M. Arkin, "Nuclear Weapons Developments and Unilateral Reduction Initiatives," in *Stockholm International Peace Research Institute (SIPRI) Yearbook 1992: World Armaments and Disarmament*, (New York: Oxford University Press, 1992), p. 82.

<sup>2</sup> Report, Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," pp. 25-26.

<sup>3</sup> Biography, General-Colonel V.O. Mikhtyuk, Commander, 43<sup>rd</sup> Rocket Army, Ukrainian Deputy Minister of Defense, and Member of the Ukrainian Ministry of Defense Collegiums, published in *Ukrainian Military Development Through the 20th Century*, (Kiev, Ukraine, 2001), p. 426. Interview, Colonel General V.O. Mikhtyuk, Commander 43<sup>rd</sup> Rocket Army, with Joseph P. Harahan, Historian, DTRA, Vinnitsa, Ukraine, 25 February 2002.

<sup>4</sup> For a reference volume on these treaties see, David B. Thomson, *A Guide to Nuclear Arms Control Treaties*, (Los Alamos: Los Alamos Historical Society, 2001). George L. Rueckert, *On-Site Inspections in Theory and Practice: A Primer on Modern Arms Control Regimes*, (Westport: Praeger, 1998). For specific treaties see, Joseph P. Harahan, *On-Site Inspections Under the INF Treaty: A History of the On-Site Inspection Agency and INF Treaty Implementation, 1988-1991*, (Washington, D.C.: On-Site Inspection Agency, U.S. Department of Defense, 1993). Also, Joseph P. Harahan and John C. Kuhn, *On-Site Inspections Under the CFE Treaty: A History of the On-Site Inspection Agency and CFE Treaty Implementation, 1990-1996*, (Washington, D.C.: On-Site Inspection Agency, U.S. Department of Defense, 1996).

<sup>5</sup> Report, Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," pp. 14-15.

<sup>6</sup> *Ibid.*, pp. 14-16. For an explanation of the INF Treaty's elimination requirements see, Harahan, *On-Site Inspections Under the INF Treaty*, pp. 99-118.

<sup>7</sup> Harahan, *On-Site Inspections Under the INF Treaty*, pp. 99-116, 117-150. Rueckert, *On-Site Inspections in Theory and Practice*, pp. 43-55. Julie Dahlitz, ed., "The Use of On-Site Inspections in the Avoidance and Settlement of Arms Control Disputes," in *Avoidance and Settlement of Arms Control Disputes: Arms Control and Disarmament Law*, vol. 2, (New York: Stationary Office Books, 1994).

<sup>8</sup> Report, Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," p. 15.

<sup>9</sup> For analyses and commentary on the significance of the START Treaty see, Dunbar Lockwood, "START: An Essential Step in a New Era," *Arms Control Today*, (November 1991), Special Supplement,

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<sup>10</sup> Report, Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," pp. 25-29. See also, William E. Odom, *The Collapse of the Soviet Military*, (New Haven: Yale University Press, 1998), pp. 66-71. Steven J. Zaloga, *The Kremlin's Nuclear Sword: The Rise and Fall of Russia's Strategic Nuclear Forces, 1945-2000*, (Washington, D.C.: Smithsonian Institution Press, 2002), pp. 60-100.

<sup>11</sup> U.S. Senate, 102<sup>nd</sup> Congress, 1st Session. *Treaty Document 102-20. Message of the President of the United States Transmitting the Treaty Between the United States of America and the Union of Socialist Soviet Republics on the Reduction and Limitation of Strategic Offensive Arms (The START Treaty), Signed at Moscow on 31 July 1991 including Annexes on Agreed Statements and Definitions; Protocols on Conversion and Elimination, Inspection, Notification, Throw-weight, Telemetry, and Joint Compliance and Inspection Commission; and Memorandum of Understanding; All Integral Parts of the START Treaty*, Washington, D.C., 1991. The best brief analysis is, Lockwood, "START," *Arms Control Today*, pp. 2-24.

<sup>12</sup> For quote see, George Bush, transcript of remarks, *Washington Post*, 1 August 1991.

<sup>13</sup> For quote see, Mikhail Gorbachev, transcript of remarks, *Washington Post*, 1 August 1991.

<sup>14</sup> *Ibid.*

<sup>15</sup> These years were the high water mark for negotiated arms control treaties and agreements. Commentary was ubiquitous across Europe, North America, and the Soviet Union. For a comprehensive survey of these treaties and their objectives in historical context see, Richard Dean Burns, ed., *Encyclopedia of Arms Control and Disarmament*, 3 volumes, (New York: Macmillan Library Reference, 1993).

<sup>16</sup> Letter of Transmittal by Secretary of State James A. Baker, 20 November 1991, published in U.S. Senate, 102<sup>nd</sup> Congress, 1st Session, *Treaty Document 102-20*, pp. viii-ix.

<sup>17</sup> Francis X. Clines, "The Soviet Crisis; K.G.B.-Military Rulers Tighten Grip; Gorbachev Absent, Yeltsin Defiant; West Voices Anger and Warns On Aid," *New York Times*, 20 August 1991. Martin Sieff, "Gorbachev Out, Hard Liner Yanayev In," *Washington Times*, 19 August 1991, pp. 1, 14. "Tanks Enter Moscow Streets," *Associated Press*, 19 August 1991. "Gorbachev Replaced," *Reuters*, 19 August 1991.

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<sup>19</sup> Francis X. Clines, "After the Coup: Yeltsin is Routing Communist Party from Key Roles throughout Russia; He Forces Vast Gorbachev Shake-Up; Soviet President is Heckled by the Republic's Parliament," *New York Times*, 24 August 1991. Fred Hiatt, "Gorbachev Says U.S.S.R. on Verge of Collapse; 7th Republic Vote to Secede; Europe Recognize Baltics," *Washington Post*, 28 August

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1991. For commentary on these events see, Martin Malia, "The August Revolution," *New York Review of Books*, 26 September 1991, pp. 22-28. Also see, Jamey Gambrell, "Seven Days That Shook the World," *New York Review of Books*, 26 September 1991, pp. 56-63.

<sup>20</sup> For historical perspective on these events see articles by Malia and Gambrell, and especially Remnick.

<sup>21</sup> George Bush and Brent Scowcroft, *A World Transformed*, (New York: Knopf, 1998), p. 527.

<sup>22</sup> Paul D'Anieri, Robert S. Kravchuk, and Taras Kuzio, *Politics and Society in Ukraine: Westview Series on the Post-Soviet Republics*, (Boulder: Westview Press, 1999), pp. 24-25. For a survey of the roots of the Ukrainian independence movement see, Taras Kuzio and Andrew Wilson, *Ukraine: Perestroika to Independence*, (Canada: Canadian Institute of Ukrainian Studies Press, 1994), Chapters 6-9.

<sup>23</sup> D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, p. 25.

<sup>24</sup> Andrea Chandler, "Statebuilding and Political Priorities in Post-Soviet Ukraine: The Role of the Military," *Armed Forces and Society*, vol. 22, no. 4 (Summer 1996), pp. 580-581. For a discussion of the transformation of the military forces see, D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, pp. 233-246.

<sup>25</sup> Paul D'Anieri, "Ukraine's Defense Policy and the Transformation of the Armed Forces," in D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, pp. 233-234.

<sup>26</sup> For an account of the meeting from two of the participants see, Kostiantyn P. Morozov, *Above and Beyond: From Soviet General to Ukrainian State Builder*, (Boston: Harvard University Press, 2000), pp. 141-146. Report, Mikhtyuk "Status of the 43rd Rocket Army, 1991-2002," p. 4.

<sup>27</sup> Morozov, *Above and Beyond*, p. 144.

<sup>28</sup> *Ibid.*, pp. 145-146.

<sup>29</sup> Odom, *Collapse of the Soviet Military*, p. 351.

<sup>30</sup> Bush and Scowcroft, *A World Transformed*, pp. 541-544.

<sup>31</sup> *Ibid.*, p. 541.

<sup>32</sup> *Ibid.*, p. 544.

<sup>33</sup> Colin L. Powell, *My American Journey: An Autobiography*, (New York: Random House, 1995), pp. 540-541.

<sup>34</sup> Ann Devroy and R. Jeffery Smith, "President Orders Sweeping Reductions in Strategic and Tactical Nuclear Arms," *Washington Post*, 28 September 1991. See also, John E. Yang, "Bush Plan Emerged After Failed Coup; White House Wanted to Take Advantage of Timing, Officials Say," *Washington Post*, 28 September 1991. Michael R. Gordon, "Bush's Arm Plan; Trust Without Verifying," *New York Times*, 29 September 1991. George Bunn and David Holloway, "Arms Control Without Treaties? Rethinking U.S.-Russian Strategic Negotiations in Light of the Duma-Senate Slowdown in Treaty Approval," *CISAC Working Paper, Center for International Security and Arms Control*, Stanford University, (February 1998).

<sup>35</sup> Bush and Scowcroft, *A World Transformed*, p. 546.

<sup>36</sup> Serge Schmemmann, "Gorbachev Matches U.S. on Nuclear Cuts and Goes Further on Strategic Warheads," *New York Times*, 6 October 1991, pp. 1, 12. For President Gorbachev's remarks see, p. 12. Fred Haitt, "Gorbachev Pledges Wide- Ranging Nuclear Cuts," *Washington Post*, 6 October 1991. For the reciprocal nature of

these reductions see, R. Jeffery Smith, "Soviet Leader's Competitive Tone Seems to Invite an Arms Race in Reverse," *Washington Post*, 6 October 1991.

<sup>37</sup> Smith, "Soviet Leader's Competitive Tone Seems to Invite Arms Race in Reverse."

<sup>38</sup> Bunn and Holloway, "Arms Control Without Treaties?," *CISAC Working Paper*.

<sup>39</sup> In the fall 1991, Congressman Les Aspin (Democrat-Wisconsin) was serving as the chairman of the U.S. House of Representatives Armed Services Committee and Senator Sam Nunn (Democrat- Georgia) was chairman of the U.S. Senate Armed Services Committee. Together they cosponsored an initiative to provide the Soviet Union with emergency food, medical supplies, and technical assistance to safely transport, store, and then dismantle that nation's nuclear and chemical weapons. Nunn had just returned from Moscow, where he met with President Gorbachev in late August. The initiative failed in committee in the fall 1991. See, Richard Combs, "U.S. Domestic Politics and the Nunn-Lugar Program," in John M. Shield and William C. Potter, eds., *Dismantling the Cold War: U.S. and NIS Perspectives on the Nunn-Lugar Cooperative Threat Reduction Program*, (Cambridge: Harvard University Press, 1997), pp. 44-45. See also, Senator Sam Nunn, "Foreword: Changing Threats in the Post-Cold War World," in Shields and Potter, eds., *Dismantling the Cold War*, p. xvi.

<sup>40</sup> See, John B. Dunlop, *The Rise of Russia and the Fall of the Soviet Empire*, (Princeton: Princeton University Press, 1993), pp. 256-270. Remnick, *Lenin's Tomb*, pp. 451-491. James A. Baker III and Thomas M. DeFrank, *The Politics of Diplomacy: Revolution, War and Peace, 1989-1992*, (New York: GP Putnam's Sons, 1995), pp. 514-545. James M. Goldgeiger and Michael McFaul, *Power and Purpose: U.S. Policy Toward Russia After the Cold War*, (Washington, D.C.: Brookings Institution Press, 2003), pp. 18-50.

<sup>41</sup> "Stockholm International Peace Research Institute (SIPRI) Yearbook 1992: World Armaments and Disarmament," *Third World Quarterly*, vol. 14, issue 1, (March 1993), p. 640. Report, Mikhtyuk, "Status of the 43rd Rocket Army, 1991-2002," pp. 4-5.

<sup>42</sup> Kuzio and Wilson, *Ukraine*, Chapter 6. See also, D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, pp. 206-232.

<sup>43</sup> D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, pp. 25-31.

<sup>44</sup> These historic events have been well recorded and chronicled. See, Dunlop, *Rise of Russia*, pp. 256-284. Odom, *The Collapse of the Soviet Military*, pp. 375-388. D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, pp. 34-35. Signe Landgren, "Post Soviet Threats to Security," in *SIPRI Yearbook 1992*, pp. 531-557. For a copy of the founding document of the CIS see, "Text of the Minsk Agreement Establishing a Commonwealth of Independent States," in *SIPRI Yearbook 1992*, pp. 558-559.

<sup>45</sup> See, Dunlop, *Rise of Russia*, pp. 271-273. Odom, *Collapse of the Soviet Military*, pp. 375-388. D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, pp. 34-39.

<sup>46</sup> Robert W. Strayer, *Why Did the Soviet Union Collapse?: Understanding Historical Change*, (New York: M.E. Sharpe, Inc.,

1998), pp. 174-196, 198-206. Landgren, "Post-Soviet Threats to Security," pp. 531-557.

<sup>47</sup> *New York Times*, 14 March 1992, p. A1.

<sup>48</sup> International Institute for Strategic Studies, *The Military Balance 1991-1992*, (London: Brassey's, 1992), pp. 30-46. Odom, *Collapse of the Soviet Military*, pp. 272-283, 298-301.

<sup>49</sup> Odom, *Collapse of the Soviet Military*, pp. 272-283, 298-301, 371-374.

<sup>50</sup> "Text of the Minsk Agreement, 8 December, 1991," in *SIPRI Yearbook 1992*, pp. 558-559.

<sup>51</sup> Russia's strategic warheads were known due to the figures submitted in the September 1990 START I Memorandum of Understanding on Data. This START Treaty data was updated by the five signatory parties when the treaty entered into force in December 1994. See, Rodney W. Jones and Mark G. McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts, 1998*, (Washington, D.C.: The Carnegie Endowment for International Peace, 1998), pp. 42-44.

<sup>52</sup> Jones and McDonough, *Tracking Nuclear Proliferation*, pp. 89-100. Zaloga, *The Kremlin's Nuclear Sword*, pp. 215-220.

<sup>53</sup> "Nuclear Weapons Deactivations Continue in FSU," *Arms Control Today*, November 1994. "Short Range Nuclear Forces," *Arms Control Reporter*, 1992. Jones and McDonough, *Tracking Nuclear Proliferation*, p. 89.

<sup>54</sup> Jones and McDonough, *Tracking Nuclear Proliferation*, pp. 79-87.

<sup>55</sup> *Ibid.*, pp. 71-74.

<sup>56</sup> International Institute for Strategic Studies, *The Military Balance, 1991-1992*, pp. 30-46.

<sup>57</sup> "Text of Alma Ata Declaration, 21 December 1991," in *SIPRI Yearbook 1992*, pp. 561-562.

<sup>58</sup> "Agreement on Joint Measures on Nuclear Weapons, Alma Ata, 21 December 1991," in *SIPRI Yearbook 1992*, p. 562.

<sup>59</sup> Bush and Scowcroft, *A World Transformed*, pp. 536-548.

<sup>60</sup> Baker and DeFrank, *Politics of Diplomacy*, pp. 524-525. Bush and Scowcroft, *A World Transformed*, pp. 543-544.

<sup>61</sup> Goldgeiger and McFaul, *Power and Purpose*, pp. 45-47. Baker and DeFrank, *Politics of Diplomacy*, pp. 562-563. Michael R. Beschloss and Strobe Talbott, *At the Highest Levels: The Inside Story of the End of the Cold War*, (Boston: Little, Brown, and Company, 1993), pp. 449-456.

<sup>62</sup> Baker and DeFrank, *Politics of Diplomacy*, p. 570.

<sup>63</sup> *Ibid.*, p. 571.

<sup>64</sup> Secretary Baker's quote, cited in, Goldgeiger and McFaul, *Power and Purpose*, p. 49.

<sup>65</sup> Baker and DeFrank, *Politics of Diplomacy*, p. 581.

<sup>66</sup> *Ibid.*, p. 582.

<sup>67</sup> *Ibid.*, p. 583.

<sup>68</sup> *Ibid.*, pp. 583-584.

<sup>69</sup> Harahan and Kuhn, *On-Site Inspections Under the CFE Treaty*, pp. 85-88.

<sup>70</sup> *Washington Post*, 22 January 1992, p. A1.

<sup>71</sup> Title II, Public Law 102-228, "The Soviet Nuclear Threat Reduction Act of 1991." For the legislative context on the law see,

Richard Combs, "U.S. Domestic Politics and the Nunn-Lugar Program," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 41-60. See also, Jason D. Ellis, *Defense By Other Means, The Politics of US-NIS Threat Reduction and Nuclear Security Cooperation*, (Westport: Praeger, 2001), pp. 25-48.

<sup>72</sup> The most incisive account is found in Senator Sam Nunn's remarks at a conference, "The Nunn-Lugar Cooperative Threat Reduction Program: Donor and Recipient Country Perspectives," held at the Monterey Institute for International Studies, Monterey, California, 20-22 August 1995. Nunn's speech was published in Shields and Potter, eds., *Dismantling the Cold War*, pp. ix-xx. Other accounts of these events are found in: Ashton B. Carter and William J. Perry, *Preventive Defense: A New Security Strategy for America*, (Washington, D.C.: Brookings Institution Press, 1999), pp. 71-72. See also, Richard Combs, "U.S. Domestic Politics and the Nunn-Lugar Program," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 41-60. Also, Richard G. Lugar, "Perspectives on Congress's role in foreign policy," speech delivered in Washington, D.C. at the Library of Congress, 15 September 2005.

<sup>73</sup> Kurt M. Campbell, et al., *Soviet Nuclear Fission: Control of the Nuclear Arsenal in a Disintegrating Soviet Union*, (Cambridge: Harvard University Press, 1991). This report was in draft form when Carter briefed the U.S. Senators in September 1991.

<sup>74</sup> *Ibid.*, pp. 5-34. For Carter's account of the briefing see, Carter and Perry, *Preventive Defense*, pp. 71-72.

<sup>75</sup> Campbell, *Soviet Nuclear Fission*, pp. 117-129.

<sup>76</sup> For Senator Nunn's quote see, Shields and Potter, eds., *Dismantling the Cold War*, p. xvii.

<sup>77</sup> Title II, Public Law 102-228, "The Soviet Nuclear Threat Reduction Act of 1991." See, Combs, "U.S. Domestic Politics and the Nunn-Lugar Program," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 41-60.

<sup>78</sup> Title II, Public Law 102-228, "The Soviet Nuclear Threat Reduction Act of 1991."

<sup>79</sup> *Ibid.*

<sup>80</sup> *Ibid.*

<sup>81</sup> Report, General-Colonel V.O. Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," p. 8.

<sup>82</sup> D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, pp. 208-210. Essentially, Ukrainian nationalists sought to maximize the fragmentation of the Soviet Union, while Russian leaders sought to minimize it. They two sets of leaders clashed repeatedly.

<sup>83</sup> *Ibid.*, p. 217.

<sup>84</sup> Morozov, *Above and Beyond*, pp. 172-181.



## **U.S. Strategy for the New States' Nuclear Inheritance**

For the emerging nations, the reality of inheriting strategic nuclear forces and weapons shifted constantly throughout 1992-1993. In Ukraine, Belarus, Kazakhstan and Russia, new governments were constructing their international relations and foreign policies, restructuring national economic systems, setting up critical administrative bureaus, and establishing their national military services and defense ministries. On the issue of strategic nuclear forces, national leaders – Yeltsin of Russia, Kravchuk of Ukraine, Shushkevich of Belarus, and Nazarbayev of Kazakhstan, developed sharp policy differences. Although they agreed on organization and structure of the Commonwealth of Independent States (CIS) Armed Forces, they soon differed over the meaning of operational and administrative controls over the rocket armies and air divisions. They differed on who owned the military bases, missile silos, test ranges and strategic weapons. They differed over which safety standards were needed for nuclear warheads in storage. Then, as the situation grew more acute, they clashed over the proper level of financial compensation for relocating nuclear weapons and warheads, and on the level of international assistance, if any, for dismantling the fixed weapon systems. It was a tumultuous time, especially since the Russian military and political leaders suddenly changed course in mid-1992, demanding that the other nations return all nuclear armaments to Russia immediately. As the region's largest and most influential new state, Russian leaders forced the issue of nuclear inheritance with the leaders of Belarus, Ukraine and Kazakhstan. Into this complex, changing and combustible crucible U.S. diplomatic and national security

leaders stepped. They used traditional diplomacy, with its personal contacts, and the Nunn-Lugar appropriations, with funding for new bilateral cooperative projects as the means to achieve the administration's principal policy objective: the emergence of new states without nuclear weapons.

In Belarus, Kazakhstan and Ukraine, the rocket armies, missile divisions and bomber commands were led by Russian generals, operated and maintained by Russian officers and men. They were controlled from higher headquarters in the Russian capital for their personnel, funding, communications, nuclear safety standards, security systems, even their operational targets. Their professional loyalty was to Russia, but their armies and commands were located in another nation's territory. Consequently, the commanders of the air divisions and rocket armies stationed in Kazakhstan and Belarus faced conflicting pressures, just like Colonel General Mikhtyuk and general officers in the 43<sup>rd</sup> Rocket Army in Ukraine. In every one of the new nations, the rush of nationalism clashed repeatedly with the reality of the Soviet/Russian armies, navies and air forces in place. As the pivotal years 1992-1993 evolved, the most pressing question was not whether a nation or supra command "controlled" the inherited strategic nuclear forces, but would these new emerging nations assert their "sovereignty" over the ownership of the nuclear forces on their national territory.

For General Mikhtyuk, commander of the 43<sup>rd</sup> Rocket Army, and for the commanders of the other strategic rocket and bomber armies, and there was far more confusion than clarity. General Mikhtyuk still commanded a strategic army of 35,000 men. The rocket army's intercontinental ballistic

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missiles and weapons were still located on missile bases in two nations – Belarus and Ukraine. As commander, he still reported to a higher headquarters in a third nation – Russia. The general knew, of course, that when the Soviet Union collapsed in December 1991 the presidents of the new states had established the new supranational command structure, the Armed Forces of the CIS. He knew the chain of command, but he was unsure what the new structure meant for the officers, men and weapons of the 43<sup>rd</sup> Rocket Army. At his headquarters in Vinnitsa, Ukraine, he and the missile division's generals discussed the new command structure and its consequences for the army. General Mikhtyuk recalled:

“The signing of the CIS agreement created the following situation: Russia regulated the control and communication systems of strategic forces on the territory of four independent states, but it was not able to relocate, reduce, increase, eliminate or

store the resources that were outside of the Russian Federation. The other three republics did not control the usage and exploitation (operation) of the strategic armaments, located on their territory. They wanted to share the ownership over the armaments, and not to let others do anything to the armaments without their agreement.”<sup>1</sup>

He and the senior commanders were uncertain “how the Russian president’s control over the ‘button’ correlated with the fact that joint command of the strategic forces and the commander-in-chief of the armed forces of the CIS were subordinated, not to Russia, but to the heads of the CIS.”<sup>2</sup> Who was in charge? As a senior military commander responsible for operational nuclear forces, Mikhtyuk found the situation confusing and uncertain. He and the general officers commanding the strategic rocket divisions knew that uncertainty could create questions within the rocket



Defense Threat Reduction Agency

Stanislav Shushkevich, President of Belarus, visits 43rd Rocket Army ICBM base, February 1992

army's ranks about its mission and future. If not clarified, the uncertain situation could influence troop morale, training, operations, and possibly, nuclear safety.<sup>3</sup>

## Ukrainian nationalism

However in January 1992, General Mikhtyuk, the generals, and the 35,000-man rocket army had to face a more immediate, pressing issue: whether to accept or reject an oath of allegiance to the nation of Ukraine. On January 9, General Kostiantyn P. Morozov, Ukraine's first Minister of Defense, invited the military commanders of the former-Soviet rocket army, conventional armies, air force divisions and naval fleets stationed on Ukrainian national territory to Kiev to meet with the nation's Supreme Council.<sup>4</sup> There, President Leonid Kravchuk and General Morozov asked all the commanders and their men to take the new oath of allegiance to Ukraine: *"I, \_\_\_\_\_, upon entering military service, solemnly swear to the people of Ukraine always to be faithful and devoted to them, to conscientiously and honestly execute my military duties and the orders of my superiors, to steadfastly uphold the Constitution and laws of Ukraine, and to safeguard state and military secrets. I swear to defend the Ukrainian state and to firmly stand for its freedom and independence. I swear never to betray the people of Ukraine."*<sup>5</sup> A few general officers took the oath that day; others declined. They were dismissed. Ukraine had inherited a combined military force of 750,000; during the first full year of independence, 1992, approximately 310,000 military officers, personnel, and conscripts took the oath of allegiance.<sup>6</sup>

But General Mikhtyuk did not, nor did most of the rocket army's officers and men. At that January 1992 meeting, the 43<sup>rd</sup> Rocket Army commander explained his dilemma to Ukraine's Minister of Defense Morozov and President Kravchuk. As commanding general of a strategic rocket army, subordinated to the CIS Armed Forces, he could not split his army's allegiance. He asked the Ukrainian president to intervene with the CIS leaders and devise a new oath for the CIS Armed Forces.<sup>7</sup> Kravchuk agreed; and a week later the Ukrainian president persuaded the other CIS leaders to issue a new agreement, "Concerning the Military Oath in the Strategic Forces." It affirmed that the 43<sup>rd</sup> Rocket Army and the other strategic forces would owe their allegiance to the CIS Commander-in-Chief, and not to the national defense ministers or the president.<sup>8</sup> This CIS agreement clarified the



Ukrainian General Kostiantyn P. Morozov, Minister of Defense

situation legally, but it did not still public speculation. Within a matter of months Ukrainian ultranationalists in public and the parliament, began questioning the loyalty of the 43<sup>rd</sup> Rocket Army, its commander, general officers and men. In resolving the questions surrounding inherited nuclear forces and territorial nationalism, two larger nations, United States and Russia, developed new diplomatic strategies. They used their power and influence, actively.

## Initial United States' strategy

U.S. leaders had a clear set of policy objectives in 1992-1993. From the outset, President Bush and Secretary Baker established a policy that stressed diplomatic engagement, support for nonproliferation policies, ratification and adherence to existing arms control agreements and treaties, and continuation of strategic arms reductions through unilateral presidential decrees. These policies began with U.S. engagement with the new states: immediate diplomatic recognition, with new ambassadors selected, confirmed and in-place within 60 days. The United States then sponsored the new states into existing North Atlantic multilateral treaty and security organizations. They negotiated with Russia's president, foreign minister and senior defense generals on continuing all aspects of

existing and negotiated strategic and conventional arms reduction treaties. Baker traveled throughout the region, meeting with the presidents of the four nuclear states and explaining to them the prospect of U.S. financial and direct assistance for the safe and secure dismantlement of nuclear weapons and forces.<sup>9</sup> In his January 1992 State of the Union address, President Bush announced that the United States would cancel its advanced strategic missile programs, stop production of W-88 nuclear warheads and MX2 test missiles, terminate the B-2 strategic bomber program at 20 aircraft and end production of new warheads for advanced sea-launched cruise missiles.<sup>10</sup> Within a week, President Yeltsin spoke before the Russian Duma outlining further weapons reductions, production cancellations and operational cessations in Russia's strategic nuclear forces. He declared that Russia would meet its required weapon eliminations under the START Treaty, within three years instead of the seven years permitted by the treaty. Further, he signaled his government's interest in reducing strategic nuclear warheads from 6,000 to 2,500 in a new treaty.<sup>11</sup>

By mid-February 1992, the Bush Administration's nonproliferation policy was clear. First, they declared that Russia would be the Soviet Union's successor state for the START I Treaty. Second, they decided the Russian president should take the lead in persuading the leaders of the three

new states - Belarus, Ukraine and Kazakhstan, to sign, ratify and implement the START I Treaty. Next, they decided to continue the diplomatic momentum toward lower and lower levels of nuclear arms by instituting negotiations on achieving agreement on new, lower strategic warhead numbers with Russia in a new bilateral START II Treaty. Fourth, they would use military and economic assistance to aid the new nations in safe and secure dismantlement of their excess weapons. And finally, they committed the administration, and subsequent ones, to carrying out all the president's announced eliminations, cancellations and cessations of tactical and strategic weapons systems.<sup>12</sup>

Secretary Baker was extremely active in carrying out this policy, initiating an array of policies and programs that engaged the new states. On January 10, Baker and Western European leaders hosted the foreign ministers of the new CIS nations at NATO Headquarters in Brussels. There, U.S., Canadian, and Western European leaders welcomed them as member-states into the North Atlantic Cooperation Council, a new multinational council set up in the fall 1991. They invited them to become signatory states to the Conventional Armed Forces in Europe (CFE) Treaty, a 1990 arms control treaty designed to reduce conventional weapons and forces stationed in 22 European nations, including the Soviet Union.

At that meeting, Russian representative, Ambassador Vladimir Petrovskiy, rose and asserted that Russia would ratify the CFE Treaty for all the other nations as it alone was the successor state to the Soviet Union. Immediately, the ministers of the other nations rejected this Russian interpretation, insisting that as sovereign states they would decide to join the treaty or not. U.S., Canadian, and Western European foreign ministers endorsed their stand. Then, all the ministers adopted a resolution that if any of the new states chose to sign and ratify the CFE Treaty, they would become original parties to the treaty. Further, they decided the treaty obligations of the former Soviet Union should be wholly accounted for by the newly independent states and should be apportioned among them in a manner acceptable to all parties. This was a significant decision since it meant that the Soviet Union's 3.7-million man conventional land, sea and air forces would be partitioned among the 15 new nations and subject to the treaty. It also meant there would be no supranational military command, like the CIS Armed Forces, for the new state's conventional military forces.<sup>13</sup>



George Bush Presidential Library

President George H.W. Bush

Baker's solution for the failed Soviet Union's strategic nuclear forces began with the assumption that the United States and Russia would ratify and implement the START Treaty quickly, within months. For this treaty, the United States regarded Russia as the successor state to the USSR. In early 1992, Baker thought Yeltsin would be able to persuade the leaders of Ukraine, Kazakhstan and Belarus to approve the START Treaty in their parliamentary bodies and simultaneously renounce their nuclear weapons and return the warheads and operational strategic forces to Russia. Then these nations would be free to sign and ratify the Non-Proliferation Treaty. To confirm these assumptions, Baker sent his deputy, Reginald Bartholomew, Undersecretary of State for Arms Control and International Security Affairs, to each capital for discussions with senior government officials in late January and early February. When he returned, Bartholomew testified before the U.S. Senate's Committee on Foreign Relations. "The four states," Bartholomew explained, "are considering among themselves a solution in which Russia would ratify START and exchange ratification instruments with us. Ukraine, Belarus and Kazakhstan would ... conclude a quadripartite agreement with Russia that would provide for implementation."<sup>14</sup> At that point they would return the warheads, and sign and ratify the NPT Treaty. Bartholomew reported to the senators that there were encouraging signs of continuity in arms control with the new leaders of the Russian Federation.

## **START I Treaty exhibition inspections**

In the first months following the collapse, issues of arms control and nonproliferation, not economics, dominated U.S., Russian and regional relations. For instance, the START I Treaty contained an innovative protocol permitting early on-site exhibition inspections. Following Bush and Gorbachev's signature of the treaty on July 31, 1991, the two nations' inspection agencies began a series of exhibition inspections that tested the treaty's inspection protocols, articles and agreements. These inspections occurred after the two presidents signed the treaty, but before ratification by the respective parliaments. Starting in mid-September, just six weeks after the treaty was signed, U.S. inspectors arrived at Uzim Air Base in USSR, for the first of 19 START I Treaty exhibition inspections. These inspections, held in both nations at bomber, missile and submarines bases

were designed to test the treaty's inspection procedures, communications systems, accessing the data and the display of strategic weapons. These exhibitions were 75 percent completed when the Soviet Union collapsed.<sup>15</sup>

Remarkably in mid-January 1992, the exhibition inspections continued, with an American START Treaty inspection team arriving in Moscow and then traveling for the exhibition inspection to Khrizolitovyy ICBM Base in Russia. Two days later, on January 17, another American team flew to the Urals for an inspection of road-mobile missiles at Nizhniy Tagil ICBM Base. U.S. arms control experts concluded that the Russian Federation's acceptance and furtherance of these inspections was an important sign of continuity on the major arms reduction treaties. They were correct. Russia's Minister of Foreign Affairs signed the Open Skies Treaty, a 24-nation multilateral arms control agreement in Helsinki, Finland in March 1992. U.S. and Russian diplomats also began discussing terms of negotiations for a subsequent strategic arms reduction treaty. As a result, when the START I treaty exhibition inspections concluded in March 1992, the Defense Department directed the On-Site Inspection Agency (OSIA) to conduct a new series of full-scale practice inspections on every U.S. inspection site. The agency projected a \$26 million budget for this new series of practice inspections during 1992. The Air Force and Navy projected they would need \$190 million during the year to prepare for implementing all aspects of the START Treaty.<sup>16</sup> In June, Major General Robert W. Parker, OSIA's director, testified to the U.S. Senate Foreign Relations Committee:

"Our preparations for carrying out the operational aspects of START have been intense and comprehensive. Implementing the START Treaty's inspection and monitoring regimes ... will form a solid foundation upon which to build future arms control efforts. When START enters into force, OSIA will be prepared to implement all the inspection and monitoring provisions."<sup>17</sup>

Ratification of the START treaty, however, went more slowly than anyone anticipated. Consequently, Secretary Baker and the Bush administration abandoned in April the objective of achieving ratification of the U.S.-Russia bilateral START I Treaty. Baker acknowledged that Russia and the other nuclear states, Ukraine, Kazakhstan and Belarus, had failed to



National Archives - Still Picture Branch

START I Inspection Team at Russian military base

agree on any arrangement for the treaty, the nuclear weapons or the new nations' non-proliferation status.<sup>18</sup> Two recent CIS summit meetings had failed. Russian ministers had set up the meetings, announced the agenda and controlled the discussions. When other nations objected, they argued and disagreed. No issues were resolved. Adding to this evidence of regional disarray, Nunn and Lugar led a small delegation to the region in March; and they reported to President Bush that confusion and disagreement existed among the CIS states, especially over the issues of nuclear forces and weapons.<sup>19</sup> They believed that United States' capacity to influence events was quite limited. As evidence, Senator Nunn said he found at the new U.S. Embassy in Kiev only one foreign service officer trying to handle all the complex, multifaceted issues with the new Ukrainian government.<sup>20</sup> These developments and the Senators Nunn and Lugar's report led Secretary Baker to initiate a new round of diplomacy. Baker's solution was to draft and negotiate a new treaty protocol, one that made all five nations a signatory party to the START Treaty, but with assurances that the three non-Russian nations would give up their nuclear weapons and accede to the Non-Proliferation

Treaty. U.S. diplomats took drafts of the new treaty protocol to each capital. Secretary Baker telephoned senior ministers in Kiev, Almaty, Minsk and Moscow, repeatedly. President Bush invited presidents Kravchuk of Ukraine and Nazarbayev of Kazakhstan to Washington for discussions at the White House.<sup>21</sup>

### U.S. solution: Lisbon Protocols

Ukraine emerged as the key nation since it refused to cede to Russia's authority to be the Soviet Union's successor state for the START Treaty. Following their White House meeting in May, Bush and Kravchuk issued a joint statement in which the Ukrainian president declared his nation would renounce its nuclear weapons, join the Non-Proliferation Treaty as a non-nuclear weapons state, and sign and ratify the START Treaty. Further, Kravchuk pledged to remove all his nation's strategic nuclear weapons within seven years following parliament's ratification of the treaty. President Bush stated the United States would recognize Ukraine as a treaty signatory state, equal with all other signatory nations.<sup>22</sup> One

legal interpretation of this international recognition held that Ukraine, and by implications the other signatory nations, “owned” the nuclear warheads, missiles and bombers, and infrastructure located physically on their territory. If that were true, then returning these military forces and nuclear warheads to another nation (Russia), or eliminating them on-site in compliance with START, could raise a series of new issues between the United States, Russia, Ukraine, Belarus and Kazakhstan.

Using this U.S.-Ukraine joint statement as leverage, Baker secured commitments from the other presidents in May 1992. Their nations would be designated in a new treaty protocol as “successor” states to the Soviet Union for the START I Treaty. As such, they would have rights, responsibilities and expenses under the treaty. They could send their national on-site inspectors to verify elimination of weapons systems in other nations; they were entitled to a seat on a special treaty verification committee; and they had to eliminate all the treaty-identified weapons located on their territory within seven years following ratification.

All these rights and responsibilities were spelled out in the new treaty protocol. Following intense negotiations with the foreign ministers and presidents, Baker secured their agreement to meet in Lisbon, Portugal on May 23, 1992 to sign the new treaty protocol. As they did so, all five nations became signatory states, turning the treaty from a bilateral to a multilateral arms reduction agreement. The three non-Russian nations committed to accede to the NPT Treaty “in the shortest possible time” as non-nuclear states.<sup>23</sup>

As part of the negotiations, Baker insisted that Ukraine, Kazakhstan and Belarus provide a letter signed by their presidents stating explicitly that their government would sign and ratify the NPT Treaty and would declare themselves as non-nuclear states. These presidential letters, the Lisbon Protocol, and the START Treaty became the basis for the U.S. Senate’s 93-6 ratification of the treaty in October 1992.<sup>24</sup> When the Russian Duma ratified the START Treaty 157-1 in early November, it added explicit reservations that the three non-Russian nations had to sign and ratify the NPT Treaty before implementation would begin in Russia.<sup>25</sup>



Secretary of State James A. Baker and President George H.W. Bush

George Bush Presidential Library

Nunn-Lugar legislation intersected with START at the junction of the U.S. commitment to provide assistance that would facilitate “transportation, storage, safeguarding and destruction of Soviet nuclear, chemical and other weapons to help prevent proliferation.” While the legislative intent was always broader than providing assistance to the new nations to meet their START I Treaty ceilings, those ceilings provided a specific, targeted rationale for subsequent legislation. In late 1991, as the original Nunn-Lugar bill was being debated in committee, the senators acknowledged that implementing START would result in relocation of hundreds, if not thousands, of warheads from the operational forces to nuclear storage depots. The senators recognized that Bush and Gorbachev’s presidential nuclear initiatives, announced in September and October, would cause their national military services to withdraw thousands of tactical nuclear weapons. These withdrawals would be in addition to the approximately 3,000 tactical nuclear warheads the Soviet military had already removed from Soviet bases in central Europe and the Baltic republics. Then in October 1991, the Soviet High Command ordered removal of approximately 5,600 tactical-range nuclear warheads from military units located in Central Asian nations, and Kazakhstan, Ukraine and Belarus. This military decision and the continuing dissolution of the Soviet Union served as context for Gorbachev when he asked Bush in late October for a meeting of U.S.-USSR experts to discuss technical issues in transporting and eliminating nuclear weapons. Bush agreed quickly, asking Secretary Baker to initiate the effort immediately. The State Department designated these expert meetings as the Safe, Secure Dismantlement (SSD) Talks.<sup>26</sup>

### Safe, Secure Dismantlement negotiations

Led by Undersecretary of State Reginald Bartholomew, these SSD Talks were essentially meetings of nuclear weapons experts, treaty technical specialists, senior military officers and diplomats from both nations. Following a large initial meeting in Washington in November 1991, a smaller, more intense meeting took place in Moscow in December.<sup>27</sup> Shortly thereafter, everything changed. The Soviet Union collapsed as a nation-state, and with its demise the world’s largest nuclear arsenal devolved to four new nations. In the same month, Congress passed and the president signed the Nunn-Lugar Act, authorizing up to \$400 million in assistance. To turn legislative intent into a



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Undersecretary of State Reginald Bartholomew (c.)

specific, defined program, Assistant Secretary Bartholomew and a small team flew to Moscow in late January 1992 for another round of SSD negotiations with Victor Mikhailov, Director of the Ministry of Atomic Energy and other senior Russian officials. They discussed U.S. assistance for the dismantlement of tactical nuclear weapons, transport of strategic and tactical nuclear warheads, elimination of strategic offensive weapon systems and prospects for future nuclear arms control measures.<sup>28</sup> At this meeting the chief engineer of the 12<sup>th</sup> Main Directorate, Russian General Staff, explained that the principal bottleneck in the Russian process of dismantling warheads was lack of a storage facility for fissile materials.<sup>29</sup> From that moment on, design and construction of a modern fissile missile facility became part of all subsequent U.S. Russian dismantlement discussions.

Gradually, during these meetings certain assumptions emerged. U.S. negotiators assumed that all American assistance for projects in Russia would be financed using Nunn-Lugar funds. Russian Federation negotiators assumed their military forces and nuclear technicians would carry out decommissioning, transporting and destruction of the strategic offensive weapons systems. Beyond these major

assumptions, the delegations found common ground in three areas: providing American specialized equipment to safeguard and secure the transport of nuclear weapons; committing U.S. technical assistance for the design of a new storage facility for fissile materials; and discussing Russian requirements for new American equipment that could be used to account for and control nuclear materials. By mid-February, these negotiations had produced a formal proposal from Secretary of State Baker to Russian Foreign Minister Andrey Kozyrev. Baker outlined specific areas where the United States' assistance could, if accepted, accelerate the process of safeguarding, securing and dismantling the Russian Federation's nuclear weapons. The seven areas of U.S. assistance would be to provide:

- Armored blankets
- Emergency response equipment
- Safe, secure railcars
- Fissile materials containers
- Nuclear materials storage
- National system of accounting and material controls for nuclear materials
- Disposition facility for highly enriched uranium and plutonium<sup>30</sup>

These specific areas, which had been coordinated with senior Russian nuclear and military officials, became the conceptual basis for subsequent negotiations in March-April-May. In March, Secretary Baker selected Major General William F. Burns, a retired U.S. Army officer with experience in arms control negotiations, to be the department's special envoy on the safety, security, and dismantlement of nuclear weapons. Other key officials on the American negotiating team were Robert B. Barker, Assistant Secretary of Defense for Atomic Energy; James Turner, Associate Director for Weapons Safety, Department of Energy; and Thomas Graham Jr., Acting General Counsel, Arms Control and Disarmament Agency. Victor Mikhailov, Director, Ministry of Atomic Energy (MinAtom) led the Russian Federation's negotiating team.<sup>31</sup>

General Burns conducted the negotiations in the classical diplomatic style of recent arms control treaty negotiations. Within the Bush administration, the National Security Council developed the U.S. government's positions, sent them to the chief of the delegation, who then negotiated the specific agreements with his Russian counterpart. In the spring months of 1992, General Burns and his small team traveled to Moscow, Kiev, Almaty and the other capital cities and held discussions on the seven proposed areas



Emergency response equipment - Armored Blankets

Defense Threat Reduction Agency

of U.S. assistance. From the beginning, Dr. Mikhailov and the Russian defense officials were wary of the American team's offers, asserting that they did not need assistance.<sup>32</sup> They insisted that if any assistance were provided, no U.S. officials would be allowed access to nuclear weapons storage facilities or weapons complexes. Nevertheless, Burns pressed on, seeking some areas of agreement where the U.S. government might provide dismantlement equipment or security assistance. The objective was to achieve agreement on a series of bilateral proposals that could be approved and signed at the forthcoming Yeltsin-Bush summit, scheduled for mid-June 1992 in Washington, D.C.

As negotiations became more specific, the role of the Department of Defense became more prominent. The draft of the first U.S.-Russian SSD "umbrella" agreement designated DOD as the executive agent for the United States for implementation.<sup>33</sup> Senators Nunn and Lugar and Congress had designated the Defense Department for this specific role. Accordingly in their role as executive agent, Department of Defense officials would sign the

bilateral implementing agreements for specific projects and programs. As early as February 1992, Secretary of Defense Cheney decided that the Undersecretary of Defense for Acquisition would administer the \$400 million Nunn-Lugar funds.<sup>34</sup> Then in March, Cheney named John H. Birely, Acting Assistant to the Secretary of Defense for Atomic Energy, as executive agent for the program's implementation. Birely was instructed to carry out the Nunn-Lugar Act in coordination with DOD's General Counsel and Comptroller.<sup>35</sup> The latter had to reprogram funds from the department's operations and manpower accounts, while the former had to ensure that the negotiated umbrella agreements conformed to U.S. laws and policies.

To do the actual work of contracting for equipment and services, delivering materials and project management, Dr. Birely selected the Defense Nuclear Agency (DNA), an organization that reported directly to him and had technical expertise in nuclear, chemical and biological weapons, federal contracting procedures and program management.<sup>36</sup> By June 1992, the U.S. government had most of the organizational



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Bush/Yeltsin Summit held in Washington, D.C., June 1992

pieces in place and functioning. Saying that, however, obscured the fact that the Nunn-Lugar program was a small, almost miniscule effort within the massive department. Birely had 23 people working SSD policy issues, while the Defense Nuclear Agency had three or four people assigned to an arms control office. Not one person was assigned specifically to implement the Nunn-Lugar program.<sup>37</sup>

## Nunn-Lugar program's first Umbrella and Implementing Agreements

In June 1992, Yeltsin traveled to Washington to meet Bush for their first summit meeting. The Burns-Mikhailov SSD Talks had concentrated on producing a set of specific agreements that would be signed at the Bush-Yeltsin summit in June. At that meeting, the two presidents signed an agreement establishing terms for negotiating the START II Treaty, and they initialed 25-30 other bilateral documents, including the first four SSD agreements.<sup>38</sup> For Nunn-Lugar, these were precedent setting documents. The first, known colloquially as the U.S.-Russia "umbrella" agreement, established the international legal framework for the United States providing assistance to the Russian nation in three critical areas: destruction of nuclear, chemical, and biological weapons, safe and secure transportation and storage of those weapons in connection with their destruction, and establishment of additional verifiable measures against proliferation of these weapons.<sup>39</sup>

This first umbrella agreement identified as the executive agents the Department of Defense for the United States and the Ministry of Atomic Energy for the Russian Federation. Specific sections, drafted by the department's legal office, stated the U.S. government would be protected by the Russian government against collection of customs fees, taxes or payments for damages from the assistance delivered by U.S. government officials or contractors. Anticipating the delivery of U.S.-purchased dismantling and deconstruction equipment, spare parts, and even the building of new facilities, the umbrella agreement prohibited the Russian government from transferring title or possession unless it obtained written agreement from the U.S. government. In addition, the U.S. inserted a formal request that its representatives would have the right to "examine" the use of any materials, training programs or services provided to Russia, and "if possible" to travel to the sites – and once



Defense Threat Reduction Agency

Fissile materials containers

there, inspect any and all records and documents. Finally, the bilateral agreement stipulated it would enter into force immediately upon signature and would be in effect for seven years, until June 1999.<sup>40</sup>

Three other SSD bilateral agreements set the terms for the U.S. providing assistance for armored blankets, emergency response equipment and fissile materials containers. In the armored blankets agreement, the Defense Department committed to deliver 200 sets of protective blankets (2,000 blankets) to the Russian Ministry of Atomic Energy immediately. In addition, the Defense Department declared it would acquire and deliver another 250 sets of blankets to Russia within a year.<sup>41</sup> In the agreement on emergency response equipment, the department pledged to provide MinAtom with nuclear accident response equipment, including communications systems; protective clothing; high-energy radiography equipment and systems for stabilizing and packaging damaged weapons. Training and maintenance were also included, along with a commitment to deliver all the equipment and services to Russia by December 1993.<sup>42</sup> The third document, the fissile materials container agreement, stipulated that DOD would provide MinAtom with up to 10,000 containers that would be used as protection for transporting and storage of fissile materials that had been extracted from dismantled nuclear weapons. Contracted for and manufactured in the United States, these fissile materials containers would be delivered to MinAtom by December 1993.<sup>43</sup>

In subsequent months, July, August and October 1992, U.S. and Russian officials signed other implementing agreements providing assistance for chemical weapons destruction, conversion of special transport railcars and design of a new fissile materials storage facility.<sup>44</sup> Dr. Birely and his small staff estimated the level of funding for each project and then reported what funds had been “obligated” against which project.

In May 1992, Birely reported to Congress that the Department of Defense proposed to obligate \$145 million to the SSD program.<sup>45</sup> By October, with the new implementing agreements signed, he wrote to Congress that the department was proposing to raise the obligation figure to \$211 million.<sup>46</sup> The Nunn-Lugar authorization required the department to notify Congress of a proposed obligation, not less than 15 days before committing any funds to weapons destruction projects or to programs for preventing weapons proliferation in the nations of the former Soviet Union. This legal requirement brought senior professional managers in the Pentagon, the Comptroller and the General Counsel, into the management of this small \$400 million international assistance fund. Senior administration officials became involved as well; the Director of the Office of Management and Budget received and transmitted the Defense Department’s requests for new obligations to Congress. Since Nunn-Lugar funds were taken out of the department’s budget, a gap developed between the announced “obligations” to Congress and “actual” program spending by the department. In 1992-1993, this gap became a serious issue within and outside of Defense Department.<sup>47</sup>

### First Nunn-Lugar deliveries: operations and evaluation

Delivery of armored blankets to Russia in July 1992 illustrates the point that promises far outpaced performance. William M. Moon, a low-level Defense Nuclear Agency civil servant, was tapped to plan and deliver 75 sets of protective blankets to Moscow in the weeks following the Bush-Yeltsin summit. The blankets were located in U.S. Army storage depots in Europe. They would be trucked to Frankfurt, Germany for loading onto a U.S. Air Force C-141 aircraft scheduled to fly to Moscow with a U.S. INF Treaty inspection team aboard. Moon would meet the flight in Moscow at Sheremetyevo airport and then turn over the armored blanket shipment to G.A.



Defense Threat Reduction Agency

William M. Moon

Smirnov, a Russian Ministry of Atomic Energy official. As project officer, Moon made all the necessary arrangements. First, he drove to the Russian Embassy in Washington to get an entry visa. Then he went to the U.S. State Department for an official diplomatic passport. Telephoning long-distance, he made hotel reservations in Moscow, booked a commercial flight and then flew to Russia alone. Once there, he persuaded someone in the U.S. Embassy who was willing to serve as a translator to accompany him to the airport. Meeting the Russian MinAtom official on the tarmac, beside the American aircraft, Moon delivered the armored blankets for the U.S. government.<sup>48</sup> This delivery, plus one earlier shipment, represented the total Nunn-Lugar assistance that actually went to Russia in 1992.

By contrast, another U.S. assistance program to the region had a far more robust record. Within weeks of the Soviet Union’s collapse, Secretary Baker organized a large international relief conference in Washington, D.C. There, Baker proposed an extensive multinational humanitarian assistance program to the emerging states. Called Provide Hope, this assistance effort delivered in one month (February 1992) 2,500 metric tons of food and medicines to more than 500 institutions -- schools, hospitals, clinics and aid centers were located in cities and towns in 11 of the 15 new

independent states.<sup>49</sup> The humanitarian relief operation was organized in less than three weeks. The Defense Department assigned this mission to the On-Site Inspection Agency who identified, trained and deployed special teams, each consisting of experienced Russian speaking arms control treaty inspectors, linguists and foreign aid specialists. Flying to Frankfurt and then to Moscow, the teams deployed to 25 cities: 13 in Russia, three in Ukraine, and the capitals of Kazakhstan, Belarus, Moldova, Armenia, Azerbaijan, Turkmenistan, Tajikistan, Uzbekistan and Kyrgyzstan. Working with national and local government officials, these teams coordinated the arrival of airlifted humanitarian assistance flown to cities and airbases all across the newly emerging states. By the end of February, Project Provide Hope had delivered 2,500 metric tons of food and medicines to the region. In mid-April, U.S. Defense and State departments initiated a second, larger assistance effort called Provide Hope II. In just five months, that program delivered 25,000 metric tons of food and medical supplies to hundreds of institutions across the Eurasian region.<sup>50</sup>

The contrast in the amount of assistance delivered to the new states in 1992 by the two programs, Nunn-Lugar and Provide Hope, raised important questions about assessing effectiveness. It also provided perspective on the sharp differences in these assistance programs. Throughout the 20<sup>th</sup> century, U.S. foreign aid programs were advanced with one or more of three broad policy objectives: to rehabilitate societies and economies of war-devastated nations; to strengthen military defenses of allied and friendly-nations; and to promote economic growth in underdeveloped nations and regions.<sup>51</sup> Using this century-long pattern, Provide Hope was designed as a humanitarian program that delivered food and medicines to a postwar impoverished region. In fact President Bush, as he opened the large international conference, referred indirectly to the Marshall Plan, which had provided aid to postwar Europe. Speaking to 654 delegates from 47 nations and seven major international aid organizations, Bush declared, "For over 40 years, we have led in the reconstruction and defense of the free world. Now that the torch of liberty has sparked freedom among our



Defense Threat Reduction Agency

Secretary of State James A. Baker (c.) meets Provide Hope team

former adversaries ...I am proposing that the U.S. Congress approve over \$600 million for new technical assistance and humanitarian efforts."<sup>52</sup> For Bush and Baker, Provide Hope was a traditional humanitarian assistance program, one with a clear set of operational concepts from depot to delivery.

Nunn-Lugar aid, by contrast, dealt in complex technological issues associated with other nations' national security forces and their nuclear, chemical, and to an unknown degree, biological weapons. These weapon systems had always been closely controlled by the national government; they were encumbered in secrecy, and encased in sophisticated technologies. Planning and carrying out an international assistance program for dismantling, transporting, storing, securing and eliminating these modern military weapons and their infrastructure was not traditional foreign or military assistance. It was radical. There were few if any modern precedents for U.S. assistance programs to actually eliminate weapons with another nation, or with several nations, simultaneously. In addition, Congress had mandated that the Bush administration had to implement the program cooperatively with national security ministries that until recently had been adversaries. That requirement assumed a degree of trust, understanding and common interest that was not present in 1992-1993.<sup>53</sup> Fears and memories of the Cold War were too recent. Across the entire region, politics were in flux as new governments were restructuring their economies, fighting inflation, defining relations between states and trying to administer basic services. Negotiating the nation-to-nation umbrella and implementing agreements for the Nunn-Lugar assistance programs to proceed was difficult and exceedingly slow. So, given these differences to use a single measure to assess one program, Nunn-Lugar, against the other, Provide Hope, would not be accurate or meaningful. Across the U.S. government, senior leaders in the administration and Congress recognized the differences, and they assessed Nunn-Lugar assistance in different terms.

President Bush, Secretary Baker, General Burns, and others in the administration saw it as one part of U.S. foreign policy engagement with the new states in the region throughout 1992-1993.<sup>54</sup> The cornerstone, they believed, was obtaining the signature, ratification and implementation of international arms control treaties for strategic, conventional and chemical weapons. They had developed, negotiated and signed the Lisbon Protocol, recognizing four nations as successor states to the USSR for the START Treaty. In



Office of Senator Richard Lugar

Senator Richard G. Lugar

nonproliferation, in conjunction with many other nations, they had succeeded in persuading the presidents of Belarus, Ukraine and Kazakhstan to declare in separate letters that they would sign and ratify the Nonproliferation Treaty. Then, they had initiated negotiations for a START II Treaty at the Yeltsin-Bush summit meeting in Washington. In July 1992, American diplomats led a successful effort to implement the CFE Treaty provisionally. Finally in the final months of 1992, the Bush Administration agreed to a series of key compromises that enabled the multinational United Nations Chemical Weapons Convention Treaty to be completed and signed in Paris in January 1993.<sup>55</sup> Nunn-Lugar assistance was but one part of this array of treaties, agreements and programs. "It was just enormously exciting," recalled Susan J. Koch, a senior official in the National Security Council who traveled to the region frequently. There was "a feeling of enormous promise." The new CIS states were "really excited about being able to deal directly with the United States. At the same time they really didn't quite know what to do next."<sup>56</sup>

Senator Richard Lugar stressed this very point in his assessment. "Regardless of the amount of resources already expended, or programs in place, the real importance of the

Nunn-Lugar Act lies in the fact that it has served to focus attention of officials in the newly independent states on U.S. goals and objectives, particularly with regard to nuclear weapons, defense conversion and nonproliferation.<sup>57</sup> For Senators Lugar and Nunn the Cold War had ended; consequently officials in the United States, Russia and the other nuclear states had to consider a new agenda: compliance with international arms control treaties, meeting nonproliferation goals, maintaining nuclear safety and security standards, and developing new programs for defense conversion. The logic of this policy, in addition to powerful bipartisan support for American assistance to the region, persuaded U.S. senators and representatives in Congress to approve \$400 million for Nunn-Lugar in 1993. Senior Bush Administration officials in the State Department and National Security Council supported the new appropriation. Defense Department officials were less enamored; they did not include the program in their annual budget request to Congress. Consequently, when the Nunn-Lugar legislation passed, it directed the Defense Department to reprogram \$400 million from the operational budget. This legislation contained all the previous requirements of presidential certifications, congressional notifications and the "Buy American" provisions.<sup>58</sup>

Nevertheless, Senator Lugar was correct that the act did represent a clear, visible statement of the American agenda: U.S. assistance would be available to the new states for nuclear, chemical and other weapons reductions; for assisting them with the compliance requirements in the arms control treaties and nonproliferation agreements; for meeting international nuclear safety and security standards, and for defense conversion. At this point the question arose: would Russia, Belarus, Kazakhstan or Ukraine accept this agenda? Certainly, throughout 1992 and 1993 the Russian Federation had far more influence with the three bordering states than did the United States. Russia had a different agenda and its own solutions for the issues associated with the "inherited" nuclear forces of the newly emerging states.

## Endnotes

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<sup>1</sup> Mikhtyuk, V.A., General-Lieutenant, Commander, "Status of 43<sup>rd</sup> Rocket Army, 1991-2002," located in DTRA, Vinnetisa, Ukraine, 2002, p. 8.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> Morozov, Konstantyn P., *Above and Beyond: From Soviet General to Ukrainian State Builder* (Harvard University Press, 2000), pp.193-195.

<sup>5</sup> Ibid. p 189.

<sup>6</sup> Morozov, *Above and Beyond*, appendix 11, pp.256-257.

<sup>7</sup> Mykhtyuk, V.A., "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002", p. 19.

<sup>8</sup> Serge Landgren, "Post-Soviet Threats to Security," in *SIPRI 1992: World Armaments and Disarmaments*, p 531-562; and Shannon Kile, Chronology of Conflict Developments in former USSR," in *SIPRI 1992: World Armaments and Disarmaments*, pp 159-170; and *FBIS-SOV 1992, "Minsk Summit Agreements,"* 18 February 1992, pp 18-27.

<sup>9</sup> James A. Baker, *The Politics of Diplomacy*, pp 5558-586, 588-613, 614-636; James M. Goldgeier and Michael McFaul, *Power and Purpose: U.S. Policy Toward Russia After the Cold War*, pp.18-40, 41-59.

<sup>10</sup> R. Jeffery Smith, "Bush Plan Would Cut the Most Modern, Potent Weapons," *Washington Post*, January 29, 1992, p A12. For a complete text of President Bush's State of the Union Address, see *Washington Post*, 29 January 1992, A14.

<sup>11</sup> Serge Schmemmann, "Yeltsin Tells Russians of Arms Cutbacks," *New York Times*, January 30, 1992, A8.

<sup>12</sup> Baker, *Politics of Diplomacy*, pp 665-669.; Goldgeier and McFaul, *Power and Purpose*, pp.54-58.

<sup>13</sup> Joseph P. Harahan and Jack C. Kuhn, III, *On-Site Inspections Under the CFE Treaty*, (Washington, 1996), pp 85-89; See also "CFE Participants Reassured on Arms Treaties," *FBIS- SOV*, 17 January 1992; and *Arms Control Reporter* 1992, p 407. B-465.

<sup>14</sup> Statement of Reginald Bartholomew, Under Secretary of State for International Security, Department of State, to the U.S. Senate, Foreign Relations Committee, SH 102-510, February 5, 1992, In his testimony, Bartholomew explained that he had held discussions in Moscow, Minsk, Kiev, and Alma Ata on the topics of command and control of the nuclear forces, disabling of tactical nuclear weapons, and consolidation and dismantling of the strategic nuclear forces. Secretary Baker testified that he discussed with the national foreign ministers the probability of signing and ratifying the START, CFE, and NPT treaties.

<sup>15</sup> Thomas Korosee, "Soviet Review of Weaponry A First," *Fort Worth Star Telegram*, Ft. Worth, Texas, September 18, 1991, pp 1-2; News Release, USAF 7<sup>th</sup> Bomb Wing, Carswell AFB, Texas, September 13, 1991. Interview, Colonel Robert Yablonski, Chief START/INF Division, OSIA, with Joseph P. Harahan, Historian, OSIA, November 3, 1998; Interview Michael Pecotte, Chief START/

## With Courage and Persistence

INF Branch, Inspection Support Staff, OSIA European Operations, with Joseph P. Harahan, Historian, OSIA, February 11, 1998.

<sup>16</sup> Letter, Brigadier General B.L. Mitchell, USAF, DCS/P&O, "Program Management Directive" July 10, 1991, with attachments; 102d Congress, 2d session, U.S. Senate, Executive Report 102-58, "The START Treaty," pp 159-166.

<sup>17</sup> Testimony of Major General Robert W. Parker, USAF, Director OSIA, to 102d Congress, 2d session, U.S. Senate Foreign Relations Committee Hearings, June 30, 1992.

<sup>18</sup> Baker, *Politics of Diplomacy*, pp 658-662.

<sup>19</sup> Don Oberdorfer, "Senators Push for Aid on "Priority Basis" to Ex-Soviet States," *Washington Post*, 13 March 1992, A21.; John E. Yang, "Senators Lobby Bush on Aid to Former Soviet Republics," *Washington Post*, 24 March 1992, A20; Terry Atlas, "Bush Ready to Help Ex-Soviets, Lawmakers to Urge Cooperation to Speed Funding Plan," *Chicago Tribune*, 23 March 1992, p1.

<sup>20</sup> Oberdorfer, "Senators Push for Aid on "Priority Basis" to Ex-Soviet States," *Washington Post*, 13 March 1992, A21.

<sup>21</sup> Baker, *Politics of Diplomacy*, pp 662-664; Goldgeier and McFaul, *Power and Purpose*, pp 54-56.

<sup>22</sup> Baker, *Politics of Diplomacy*, 664-665; *Presidential Papers of George Bush, 1992-1993, Book I, January 1 to July 31, 1992*, "Joint Declaration with President Leonid Kravchuk of Ukraine, May 6, 1992," pp 703-704.

<sup>23</sup> Dunbar Lockwood, "Nuclear Arms Control," in *SIPRI, 1993: World Armaments and Disarmaments*, pp 549-557.

<sup>24</sup> See *Congressional Record*, S15955-15957, 1 October 1992; John N. Cushman, "Nuclear-Arms Pact Endorsed in Senate," *New York Times*, October 2, 1992, p.A1-A14.

<sup>25</sup> Mark D. Skootsky, "An Annotated Chronology of Post-Soviet Nuclear Disarmament, 1991-1994," in *The Nonproliferation Review* (Spring-Summer 1995), p 71; See also, Dunbar Lockwood, "Nuclear Arms Control," in *SIPRI, 1994: World Armaments and Disarmaments*, pp 639-644.

<sup>26</sup> Graham Allison, Ashton B. Carter, Steven E. Miller, and Philip Zelikow, eds., *Cooperative Denuclearization*, CSIA Studies, No. 2 (Cambridge, Mass., 1993). Pp 26-58, 87-106, 146-162, 242-252. For the situation with tactical nuclear weapons see, Gunnar O. Arbman and Charles L. Thornton, "Russia's Tactical Nuclear Weapons," Report, Part I, (Stockholm, Sweden, 2003), pp 18-19. On the SSD Talks see, Dunbar Lockwood, "Nuclear Arms Control," in *SIPRI, 1994, World Armaments and Disarmaments*, pp 665-669.

<sup>27</sup> See Statement, Under Secretary Reginald Bartholomew, U.S. State Department, to U.S. Senate Foreign Relations Committee, SH 102-510, February 5, 1992. See also, Interview, Ambassador William Courtney with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, August 28, 2002. During the fall and winter of 1991-1992, Courtney worked with the U.S.-Soviet-Russian delegations in a series of technical meetings.

<sup>28</sup> Statement, Bartholomew, U.S. Senate, Foreign Relations Committee, SH 102-510, February 5, 1992. For the first two years following the collapse of the Soviet Union, the U.S. State Department led the effort to discuss, define, negotiate, and draft the areas of assistance and the diplomatic agreements between the

United States and the four nations – Russia, Belarus, Ukraine, and Kazakhstan. In February, 1992, Under Secretary Bartholomew led a large American delegation to Moscow, Kiev, Minsk, and Alma Ata. Following the high-level meetings, technical experts remained and held discussions with their counterparts.

<sup>29</sup> Interview, Dr. Susan Koch, Deputy Assistant Secretary of Defense for Threat Reduction Policy with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Washington, D.C., June 7, 2000. From December 1991 to February 1993, Dr. Koch worked at the National Security Council in the White House where she was the deputy chief of Defense Policy and Arms Control Directorate.

<sup>30</sup> Statement, Bartholomew to U.S. Senate Foreign Relations Committee, SH 102-510, February 5, 1992.

<sup>31</sup> Statement, Major General William F. Burns, U.S. Army (retired), Special Envoy on the Safety, Security, and Dismantlement of Nuclear Weapons, Department of State, to U.S. Senate, Committee on Foreign Relations, SH 102-872, 27 July 1992.

<sup>32</sup> Interview, Dr. Victor Nikolai Mikhaylov, Minister of Atomic Energy, (1992-1998), Russian Federation and Scientific Director of the Sarov Nuclear Center, 1999 - 2005, Russian Federation, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, U.S. Department of Defense, Moscow, January 19, 2005. See Statement, Major General William F. Burns, U.S. Army (retired), Special Envoy on the Safety, Security, and Dismantlement of Nuclear Weapons, Department of State, to U.S. Senate, Committee on Foreign Relations, SH 102-872, 27 July 1992.

<sup>33</sup> See Jason D. Ellis, *Defense By Other Means: The Politics of US-NIS Threat Reduction and Nuclear Security Cooperation*, pp 117-118. While State Department officials negotiated these foundation agreements, the Defense Department's senior managers intended to become, from the beginning, the chief implementing agents for the program. Both U.S. Senators Nunn and Lugar indicated that they wanted the Defense Department to implement the program. For an account of these roles and missions issues, see Statement, Dr. John H. Birely, Acting Assistant Secretary of Defense for Atomic Energy, U.S. Senate, Committee on Foreign Relations, S.H. 102-872.

<sup>34</sup> Ibid. In his statement, Dr. Birely explained the Defense Department's organizational structure for implementing the Nunn-Lugar program.

<sup>35</sup> Ibid.

<sup>36</sup> Ibid.

<sup>37</sup> Interview, Paul Boren, Chief Program Integration Division, Cooperative Threat Reduction Directorate, Defense Threat Reduction Agency, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Washington, 26 May 2000, and Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, Cooperative Threat Reduction Directorate, Defense Threat Reduction Agency, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Washington, 20 July 2004.

<sup>38</sup> Michael Wines, "Accord at Summit," *New York Times*, 17 June 1992, p A1-A10.

<sup>39</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," Washington, 17 June, 1992. The agreement was signed by George Bush and Boris Yeltsin.

<sup>40</sup> Ibid.

<sup>41</sup> "Agreement between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning the Safe and Secure Transportation and Storage of Nuclear Weapons Through the Provision of Armored Blankets," Washington, 17 June 1992.

<sup>42</sup> "Agreement between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning the Safe and Secure Transportation and Storage of Nuclear Weapons Through the Provision of Emergency Response Equipment and Related Training," Washington, 17 June 1992.

<sup>43</sup> "Agreement between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning the Safe and Secure Transportation and Storage of Nuclear Weapons Through the Provision of Fissile Missile Containers," Washington, 17 June 1992.

<sup>44</sup> "Agreement between the Department of Defense of the United States of America and the president's Committee on Conventional Problems of Chemical and Biological Weapons of the Russian Federation concerning the Safe, Secure, and Ecologically Sound Destruction of Chemical Weapons," Washington, 30 July 1992; "Agreement between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning the Safe and Secure Transportation of Nuclear Weapons Through the Provision of Cargo and Guard Railcar Conversion Kits", Moscow, 28 August 1992; "Agreement between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning Technical Assistance for the Design of a Safe, Secure, and Ecologically Sound Storage Facility for Fissile Material Derived from the Destruction of Nuclear Weapons," Washington, 5 October 1992.

<sup>45</sup> DOD Report, "Report on Proposed Obligations for Facilitating Weapons Destruction and Nonproliferation in the Former Soviet Union," May 12, 1992, attached to Letter, Sean O'Keefe, Comptroller, DOD to Honorable Dan Quayle, President of the Senate, May 16, 1992.

<sup>46</sup> Letter, Donald B. Shycoff, Acting Director, Comptroller, DOD, to Honorable Dan Quayle, President of the Senate, December 28, 1992.

<sup>47</sup> The Government Accounting Office, an investigative agency working for Congress, evaluated the Nunn-Lugar program, criticizing its "ad-hoc" nature, judging its capability to define and validate specific act-funded projects, and questioning the department's plans for the proposed fissile materials storage facility. See Statement, Frank C. Conahan, Assistant Comptroller General, U.S. Government Accounting Office, to the Committee of Foreign Relations, U.S. Senate, 21 Jul 1992.

<sup>48</sup> Interview, and William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, Cooperative Threat Reduction Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Washington, 20 July 2004.

<sup>49</sup> Baker, *Politics of Diplomacy*, 616-619.

<sup>50</sup> David Hoffman, "Pentagon to Airlift Aid to Republics; Ex-Soviets Will Get Food, Medicine," *Washington Post*, 24 January 1992, A1. See Baker, *Politics of Diplomacy*, 619. For a description of the actual operation see report, David M. Willford, *A Brief History of the On-Site Inspection Agency*, Washington, 1997, pp 5-6.

<sup>51</sup> See Walter A. McDougal, *Promised Land and Crusader State, The American Encounter with the World Since 1776*, New York, 1997, and Janine R. Wedel, *Collision and Collusion: The Strange Case of Western Aid to Eastern Europe, 1989-1998*, New York, 1998.

<sup>52</sup> President George H.W. Bush, "Coordinating Assistance to the Newly Independent States," speech to the Coordinating Conference on Assistance to the Newly Independent States, Department of State, Washington, D.C., 22 January 1992. For context see, David Hoffman, "U.S. Opens World Conference Today on Assistance to Post-Soviet nations," *Washington Post*, 22 January 1992, A26.

<sup>53</sup> Ellis, *Defense By Other Means*, pp 10-14. Ellis has an excellent discussion of the complex decision process within the U.S. government.

<sup>54</sup> There were literally dozens of different programs to aid the former Soviet Union states that were developed after the collapse of the Soviet Union. For a good, chronologically organized survey, see Curt Tarnoff, *U.S. Assistance to the Soviet Union and its Successor States, 1991-1994: A History of Administration and Congressional Action*, CRS Report 95-914F, August 23, 1995.

<sup>55</sup> George Bush and Brent Scowcroft, *A World Transformed*, p543-548; Baker, *Politics of Diplomacy*, pp 668-670.; James E. Goodby, *Europe Undivided, The New Logic of Peace in U.S.- Russian Relations*, Washington, D.C., 1998.

<sup>56</sup> Interview, Dr. Susan Koch, Deputy Assistant Secretary of Defense for Threat Reduction Policy with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Washington, D.C., June 7, 2000.

<sup>57</sup> Statement of U.S. Senator Richard M. Lugar (R-Indiana) U.S. Senate, Committee on Foreign Relations, S.H. 102-872, 27 July 1992, p. 14.

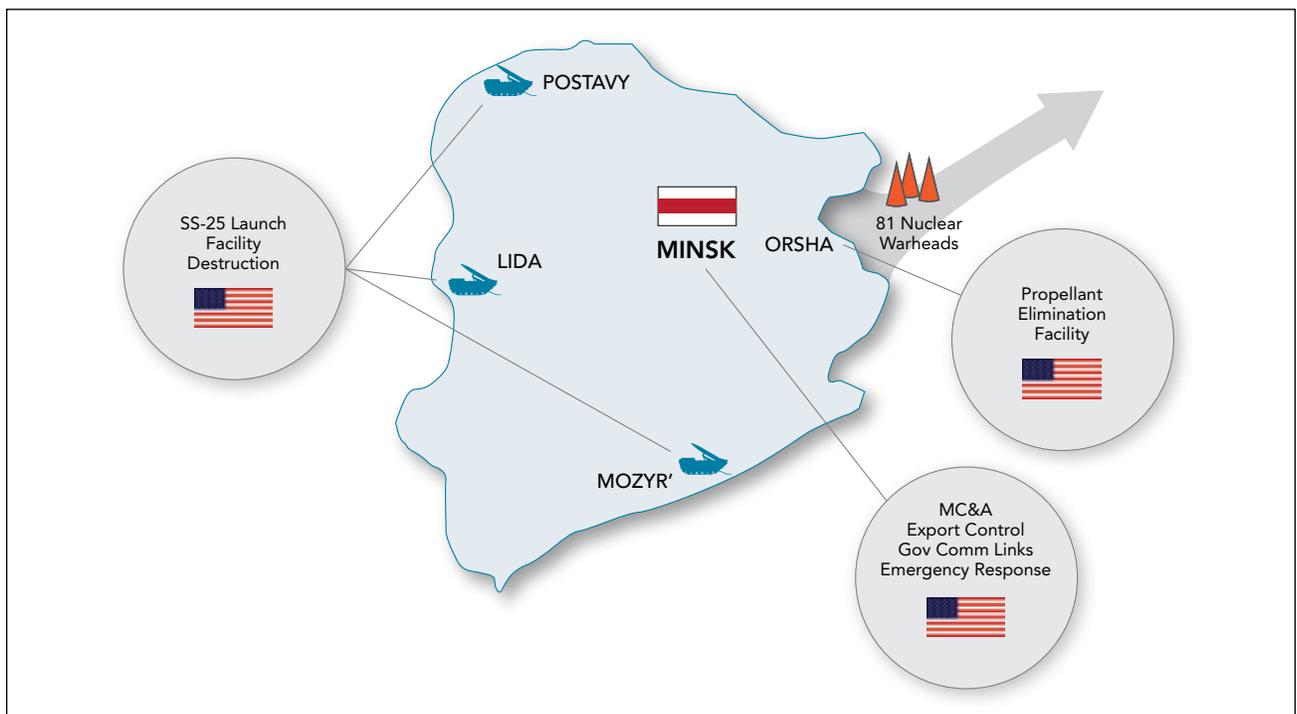
<sup>58</sup> Public Law 102-484, 102<sup>nd</sup> Congress, FY 1993, National Defense Authorization Act. See also, Richard Combs, "U.S. Domestic Politics and the Nunn-Lugar Program," in John M. Shields and William C. Potter, editors, *Dismantling the Cold War*, pp 41-60; Ellis, *Defense By Other Means*, pp. 77-100.



## Belarus: From Nuclear Inheritance to Nuclear Succession

As architects of the Soviet Union's collapse, President Yeltsin, Foreign Minister Kozorev and Defense Minister Marshal Shaposhnikov had a clear concept in December 1991 for all the Soviet Union's military forces – strategic rocket, navy, land and air forces. The Soviet Armed Forces would be transformed for a period of time, into the Commonwealth of Independent States (CIS) Armed Forces, which would become a supranational force. It would be dominated and

controlled by Russian generals, admirals and directors of the military-industrial-scientific complexes. Marshal Shaposhnikov would become the supreme commander, with all the former Soviet Union's military forces subordinate to him. Furthermore, all the Soviet Union's centralized military systems for logistics, personnel, procurement, training, technical support, nuclear surety, and nuclear command and control would be retained for the new CIS Armed



Nunn Lugar Cooperative Threat Reduction projects in Belarus

Forces.<sup>1</sup> Shaposhnikov said that breaking apart the Soviet Armed Forces into national armies would radically change their missions, disrupt personnel and destroy their combat effectiveness for many years. Dividing the Soviet Union's nuclear forces was simply unthinkable.<sup>2</sup> If the CIS Armed Forces were to retain the former Soviet empire's military power and influence, it had to preserve intact its military forces, together with their centralized logistics, personnel and support systems. Consequently, Yeltsin, Kozarev and Shaposhnikov all supported the CIS and its armed forces in the winter and spring months of 1992.

Their support was so strong that they did not establish a Russian Ministry of Defense (MOD) nor Russian Armed Forces until May 1992, six months after the Soviet Union collapsed. The reason was that the CIS Armed Forces were essentially

controlled by a Russian marshal, the Russian General Staff and the Russian dominated military-industrial enterprises. Under this regional security concept, the newly independent states would not control their own army, navy, air force or military-industrial complexes. At the CIS summit meeting in Minsk in February 1992, leaders of Ukraine, Moldova and Azerbaijan declared they would be establishing their own national military forces. In fact, Ukraine had already done so a month earlier. Ukraine's Armed Forces would be separate, but subordinate to the CIS Armed Forces Command.<sup>3</sup> All the other nations would be defended by the CIS Armed Forces. They would not have independent national armies, navies or air forces.<sup>4</sup> At this summit, Russian Marshal Shaposhnikov was formally confirmed as the Commander-in-Chief of the CIS Armed Forces. Given the nationalism that forced the



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President Boris Yeltsin and General Pavel S. Grachev (l.-r.)

Soviet empire's collapse, this Russian-centric CIS military alliance concept was, at best naïve, and at worst imperialistic.

Within weeks of the Soviet Union's failure, there were new developments, especially in Ukraine, which tested the idea of a Russian-dominated CIS Armed Forces. In the first week of January 1992, Ukraine's president and minister of defense issued an order that an oath of allegiance be given to all military forces, except the strategic rocket and bomber forces, stationed in Ukrainian territory. One year later, more than 300,000 soldiers, sailors and airmen had declared their allegiance to the new nation.<sup>5</sup> Then in April, Ukraine's foreign minister publicly rejected Russia's statement that it alone was the sole legitimate successor state to the START Treaty.<sup>6</sup> That declaration and Ukraine's adamant position forced the United States to reconsider its stance. That same month, President Kravchuk declared that Ukraine would assume "administrative control" over all military forces, including strategic nuclear forces, stationed in its national territory. This term was ambiguous, but at a minimum, it asserted Ukraine's sovereignty over the fixed facilities – the structures, runways, permanent equipment and military bases located in its national territory.<sup>7</sup>

Ukraine was not the only nation that rejected the concept of a Russian-dominated CIS Armed Forces. 14 of the 15 new states signaled their intention to sign and ratify the Conventional Armed Forces in Europe (CFE) Treaty. Implicit in this act was the demand for partitioning the former Soviet Union's vast 3.7 million man conventional armed forces. The new states would inherit those forces stationed in their territory, along with the mandatory reductions required by the CFE Treaty.<sup>8</sup> As a direct reaction to these developments, many senior Russian general officers had concluded by the spring of 1992 that the concept of the supranational CIS Armed Forces would never work. In every one of the recently independent states, the new political economy emphasized independence, nationalism and sovereignty.

In March, Yeltsin named General Pavel Grachev to be Deputy Minister of Defense for the Russian Federation. Grachev led a military faction opposed to Shaposhnikov and the CIS Armed Forces. All these personalities and issues collided at a CIS Summit meeting in Tashkent, Uzbekistan in May 1992. There, Russian officers proposed a formula for dividing the Soviet Union's conventional armed forces among the newly independent states. They put forth a collective security treaty along the NATO model, with all the



Defense Threat Reduction Agency

Tashkent, Uzbekistan

new states pledging to defend the other nations if attacked. Finally, they agreed to accept all the former Soviet Union's treaty reduction quotas as stipulated in the CFE Treaty. Following discussions, the defense ministers accepted in principle, the Russian plan that partitioned the conventional armed forces of the former USSR.<sup>9</sup>

These Tashkent decisions occurred the same week the United States Secretary of State signed the Lisbon Protocols to the START I Treaty, recognizing that those states that had inherited nuclear weapons – Russia, Ukraine, Belarus and Kazakhstan, would be legally designated as "successor" states. These significant decisions by Russia and the United States began a death knell for the CIS Armed Forces. It grew louder in June 1992 when General Grachev became Russia's Minister of Defense. Acting quickly, he reestablished the Russian General Staff, and reconstituted the Russian army, navy and air force. Only the strategic nuclear forces remained in the CIS Armed Forces. In a symbolic gesture, Grachev evicted Marshal Shaposhnikov and his small CIS military staff from their offices in central Moscow, relocating them in the former Warsaw Pact headquarters in the city's northern suburbs. Clearly, by this time Grachev and the General Staff



Department of Defense

Tu-160 Blackjack bomber

had moved away from the concept of a regional CIS Armed Forces. Instead, they were turning to a new national security strategy, one that had Russia as the region's dominant conventional and strategic power. Russian defense leaders stressed that Yeltsin and the government must undertake negotiations leading to new bilateral agreements that would persuade Belarus, Kazakhstan and Ukraine to return the region's strategic nuclear forces and weapons to the Russian Federation.<sup>10</sup>

Russia had inherited approximately 75 percent of the former Soviet Union's nuclear arsenal. All the Soviet navy's strategic nuclear submarines had been assigned to the Pacific and Northern fleets, and all the nuclear submarines were based at ports located in the Russian Federation. Consequently, following the collapse the Russian Navy took possession of these submarine fleets. The Russian Air Force took control of the former Soviet Union's strategic heavy bomber forces, with the exception of two bomber commands. Ukraine inherited the 46<sup>th</sup> Bomber Army, with 19 Tu-160 bombers based at Priluki air base and 25 Tu-95

Bear bombers based at Uzin. On Kazakhstan's territory, the 79<sup>th</sup> Heavy Bomber Division had 40 Tu-95 Bear H strategic bombers – half of all the bombers of this type in the Soviet Air Force's inventory of long-range aviation. They were located at Chagan Air Base. The Russian Air Force controlled and operated these strategic air forces. However under the CIS charter, Russia could not relocate the bomber forces based in Ukraine and Kazakhstan.

After the fall of the Soviet Union, the CIS Armed Forces assigned the Russian Strategic Rocket Forces (SRF) command and control over the four nations' intercontinental rocket armies. This command arrangement was consistent with that of the Soviet Union. In the post-Soviet era, Russia "owned" outright three-fourths of the former empire's Strategic Rocket Forces. The other rocket forces were based in two large rocket armies located in Ukraine and Kazakhstan, and three divisions in Belarus. It was these strategic rocket armies, along with the bomber forces, that the Russian leaders focused on in negotiations with the three bordering states in 1992 and 1993. Their strategy was to negotiate new bilateral

agreements that would grant Russia legal authority to relocate all these strategic nuclear forces and nuclear warheads onto its territory, quickly and without delay. Russia would then carry out all the provisions of START I, and de facto, assume the superpower status that the Soviet Union had projected.<sup>11</sup>

## Russia's new regional strategy: One single nuclear successor state

When the CIS nation's foreign and defense ministers met in Moscow in July 1992, Marshal Shaposhnikov and General Boris Pyankov, CIS First Deputy Commander, explained that the strategic forces on their national territories should be under complete command of the CIS Supreme Commander and the Russian SRF Commander. They told the defense ministers of Ukraine, Belarus and Kazakhstan that the Russian Federation was the sole nuclear successor state, and that they should be prepared for their strategic nuclear forces to be decommissioned and eventually transferred to Russia. Given the power relationships, the Belarus and Kazakhstan ministers concurred, while Ukraine's defense minister refused. Afterwards, General Pyankov told reporters, "Today we proposed to decommission the nuclear warheads from strategic missiles deployed in Ukraine, or delete the flight maps from the onboard computers. This would turn the missiles into cans without fuel...and there would be no necessity to speak about the nuclear status of Ukraine."<sup>12</sup> When Ukraine's representatives rejected this ploy, they raised the Russian general officers' ire. Marshal Shaposhnikov was explicit in his public criticism:

"They [Ukrainians] say they will be under our operational command, but under their operational subordination. Operational subordination means a Ukrainian oath, Ukrainian personnel policy and appointments and Ukrainian upkeep. It would mean that I would be commanding Ukrainian servicemen. I do not want that... Either it's my serviceman, subordinated to me, or a Ukrainian one. If he's a Ukrainian, let Ukraine announce that it is a nuclear power and let the world community discuss this (fact) with it."<sup>13</sup>

What the Marshal wanted was total command and control over General Mikhtyuk's 43<sup>rd</sup> Rocket Army, with its 139 SS-19

rockets (six warheads each), 46 SS-24 rockets (10 warheads), 81 SS-25s (one warhead) and an estimated 1,300 nuclear warheads. What the Marshal did not want was the national government in Kiev to interject itself into the command structure in any way. Yet in April 1992, Ukraine's president issued a decree that all military formations, including the 43<sup>rd</sup> Rocket Army, Object "C" areas, missile plants and the SRF's nuclear arsenals located on Ukrainian territory would be subordinated administratively to the Minister of Defense.<sup>14</sup> To Marshal Shaposhnikov's public criticism of Ukraine General Ivan Bizhan, Ukraine's Deputy Minister of Defense, replied sharply: "Ukraine insists on keeping nuclear warheads in assembly with delivery vehicles deployed on its territory, largely because it has no confidence in Marshal Shaposhnikov's statements."<sup>15</sup>

Testy and acerbic, the Ukrainian-Russian fissure grew worse with each passing month. By the first week in October 1992, when the CIS defense ministers met in Kyrgyzstan,



Russian Air Marshal Yevgeny I. Shaposhnikov, Commander of CIS Military Forces

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Russia and Ukraine were at a breaking point. Prior to the meeting, Marshal Shaposhnikov stated publicly that he believed all nuclear weapons and forces should be transferred immediately to Russia's jurisdiction. At one point he declared, "I am prepared to hand over the nuclear briefcase to the Russian Defense Minister today or tomorrow..."<sup>16</sup> When the meeting convened, the defense ministers from Russia, Belarus and Kazakhstan agreed on a draft proposal that explicitly declared that combat control over the combined strategic nuclear forces would be exercised jointly by the CIS High Command and the Russian Minister of Defense. Belarus, taking it further, indicated its willingness to give up legal rights to its strategic nuclear forces. At Ukraine's insistence, however, the proposal was dropped. When the meeting ended, Shaposhnikov admitted publicly that it was a failure and asked the defense ministers to negotiate bilateral agreements that would define the jurisdiction, withdrawal and transfer of their strategic nuclear warheads to Russia.<sup>17</sup>

The next month, Russian leaders stepped up their pressure to get legal, and then actual possession of all of the strategic nuclear forces. In early November the Russian Duma ratified the START I Treaty conditionally. It declared that Russia would delay formal exchange of treaty documents until Belarus,

Kazakhstan and Ukraine ratified the START Treaty, signed and ratified the Nuclear Non-Proliferation (NPT) Treaty, and negotiated and signed bilateral agreements on the return of their strategic nuclear weapons to the Russia. The Duma's vote, 157 to 1 in favor, endorsed the government's policy on the "inherited" strategic nuclear forces in the non-Russian states.<sup>18</sup> Here was another sign that the Russian government, for all practical purposes, had abandoned its support for the CIS Armed Forces. Among the governments of Ukraine, Kazakhstan and Belarus, the real issue was not which nation had operational control over the strategic nuclear forces, but which entity "owned" the bases, forces, weapons and facilities of the strategic forces located in these nations.

National leaders in Ukraine and Kazakhstan insisted that the CIS charter, which had been agreed to unanimously in December 1991 in Almaty, stated that the new states were entitled to all of the property within their borders.<sup>19</sup> This, however, was a tenuous claim. The CIS agreement specified control over the strategic nuclear forces, not ownership. To strengthen its position, the government of Ukraine clarified its claim on ownership in early November 1992, only a week after the Russian Duma had ratified the START Treaty. "The property of the armed forces of the former Soviet Union,"



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U.S. President George H.W. Bush and Russian President Boris Yeltsin sign START II, January 1993

the Ukrainian government asserted, “which was located on the territory of Ukraine at the time of its independence, including the entire property of the strategic nuclear forces, belongs to Ukraine.”<sup>20</sup> Immediately, Russian military leaders and diplomats rejected this claim and continued pressing governments of the other nations to give up jurisdiction – their sovereign legal right of ownership of the weapons and forces – to the Russian Federation.

Russian leaders used arms control and nonproliferation treaties to achieve their dominant foreign policy objective: diplomatic and international recognition for the Russian Federation as the Soviet Union’s sole successor nuclear state. In January 1993 Boris Yeltsin and George H.W. Bush signed a major new strategic arms reduction treaty, known as START II. Russia and the United States pledged to reduce their nation’s accountable strategic warheads from 6,000 to a level of between 3,500 and 3,000, with specified operational restrictions on deployments. When ratified and implemented, there would be substantial reductions in their nuclear forces – intercontinental ballistic missiles, submarine-launched ballistic missiles, and an outright prohibition on missile multiple warheads. At the end of the treaty’s 15 year life, both Russia and the United States would have cut their strategic nuclear forces by 70 percent from 1990 levels.<sup>21</sup> As they signed the treaty, Bush and Yeltsin issued statements linking START II with both START I and the Lisbon Protocols.<sup>22</sup> The treaty’s Lisbon protocols already signed but not ratified, included statements from the foreign ministers of Belarus, Ukraine and Kazakhstan that their nations would give up their strategic armaments, and sign and ratify the Non-Proliferation Treaty. These actions, if carried out, would leave the Russian Federation as the sole nuclear state in the region.

By January 1993, one year after the former Soviet empire’s devolution, all Russian ministers and national security officials believed that they had to stop any of the new nations in the region from emerging with modern strategic forces and nuclear weapons. For Russia’s Ministry of Defense and General Staff, the existing and new arms control treaties were structural international agreements for the long term. However, since treaty ratification could take years, the defense ministry and senior military staffs turned to more immediate issues. Minister Grachev’s objective was to consolidate all the region’s strategic nuclear forces and the thousands of nuclear warheads at bases and depots in the Russian Federation. Put



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President Stanislav S. Shushkevich, Belarus

more bluntly: General Grachev and the General Staff would not allow any new nuclear states to emerge in the region. In April 1993, all these national security policy objectives merged into a major foreign policy directive issued by President Yeltsin, “Basic Provisions of the Russian Federation’s Foreign Policy Concept.” Henceforth, the Russian President declared that the Russia Federation’s strategic objective would be “ensuring Russia’s status as the only nuclear power in the Commonwealth of Independent States.”<sup>23</sup>

## Success with Belarus

Across the region, there were signs of success. Belarus was the first nation to accede to Russia’s demands. In October 1992, Stanislav Shushkevich, chairman of the Belarus Supreme Soviet, announced that Belarus and Russia had

signed an agreement declaring that the strategic nuclear forces on its territory – three missile divisions, with 81 SS-25 missiles – would be legally placed under jurisdiction of the Russian General Staff.<sup>24</sup> Shushkevich acknowledged that the commander of Russian Strategic Rocket Forces had authority over these missiles. Command authority included control over arming and launching codes for the SS-25 missiles. In the new document, the Belarusian parliamentary chairman agreed that the Russian Federation would have legal jurisdiction over the missile divisions. The Belarusian government agreed to negotiate a withdrawal schedule for removing the three divisions, including missiles, launchers, support equipment and personnel to Russia within two years. Not part of this bilateral agreement, but understood, was that Russia also legally owned all of the tactical nuclear weapons that Belarus inherited in 1991. Those weapons were anti-aircraft missile warheads, aerial bombs, nuclear landmines and nuclear artillery shells.<sup>25</sup> The Russian General Staff had already removed these tactical nuclear weapons and warheads from Belarus in the spring of 1992.<sup>26</sup>

Each of the 81 SS-25 missiles located in Belarus was capable of launching a single nuclear warhead. Operationally, the missiles, each equipped with 750-kiloton warheads, were mounted on large military vehicles that were driven deep into the forest and parked on prepositioned launching pads. When launched, the missiles had an intercontinental range of approximately 6,500 miles. The missiles in Belarus were a small part of the Soviet Union's larger SS-25 force, totaling 354 missiles, which had been deployed from 1985 to 1991.<sup>27</sup> Since these missiles were mounted on military vehicles, they could be driven or transported via rail to SS-25 bases in Russia and incorporated into existing combat units.

Organizationally, the three divisions in Belarus were elements of the 43<sup>rd</sup> Rocket Army, commanded by General Mikhtyuk from his headquarters in Vinnitsa, Ukraine. At this time Mikhtyuk had six missile divisions stationed on Belarus territory. Of these, three divisions were paper units without missiles or personnel. Following the October 1992 Belarus-Russian agreement, there was a series of meetings in Kiev and Moscow between the Russian SRF commander and Ukraine's Minister of Defense. Only after these meetings did General Mikhtyuk order immediate disbanding of the three unequipped missile divisions, located at Lutsk, Romney and Belokorovichy. The three active missile divisions in Belarus located at Lida, Mozyr and Postavy, with 81 SS-25 ICBMs

and approximately 9,500 men, remained under Mikhtyuk's command for another year.<sup>28</sup>

President Boris Yeltsin declared early in 1992 that the Russian General Staff had transferred all the former Soviet Union's chemical weapons to Russia. Belarus did not have any stored chemical weapons or any production capacity, and had no plans to establish any.<sup>29</sup> According to the U.S. Department of Defense, Belarus also had no biological warfare program. As a Soviet Republic, Belarus had signed and ratified the 1972 Biological and Toxin Weapons Convention and accordingly, did not have any biological weapons on its territory in the mid-1990s.<sup>30</sup> Thus, the 81 SS-25s, which were operational, constituted the new nation's only strategic weapons system. In the fall and winter of 1992-1993, Russian and Belarusian defense officials moved quickly to negotiate a schedule for removing the nuclear warheads and missiles. The Russian SRF planning staff drew up a schedule, with the objective of relocating the final SS-25 regiments onto Russian missile bases by December 1994. However, a complex array of political issues and events within both the Russian and Belarusian governments delayed initial and later movements of the missile regiments. It was not until December 1996 that the SRF transported the last regiment of SS-25s and launchers out of Belarus and into Russia.<sup>31</sup> Throughout the two and a half years of the withdrawal operation, Russian general officers controlled access to the regiments, missiles, facilities and rocket forces. In Belarus, Ministry of Defense officials did not command or control these strategic rocket forces to any degree.

William F. Burns, U.S. Special Envoy on the Safety, Security and Dismantlement (SSD) of Nuclear Weapons, and a small team arrived in Minsk, Belarus in fall of 1992. Belarus had been an independent nation for 10 months. The American diplomats met with Belarusian Ministry of Foreign Affairs officials to negotiate an agreement defining the conditions for Nunn-Lugar assistance from the United States. Andrei Sannikov, Deputy Foreign Minister, led the Belarus delegation with assistance from Ivan Naidovich, Head of the Department of International Treaties, and Alexander Baichov, Head of the Directorate of International Security and Disarmament.<sup>32</sup> Negotiations progressed quickly. On October 22, 1992 American and Belarusian officials signed the first U.S.-Belarus Cooperative Threat Reduction umbrella agreement.<sup>33</sup> This agreement would remain in effect for five years. They also

signed two implementing documents; one designated a CTR project of up to \$5 million that would assist Belarus' military forces in training and using U.S. purchased emergency response equipment for responding to a nuclear accident. The other designated a project up to \$1 million for setting up and equipping an export control system for identifying and controlling nuclear materials in Belarus.<sup>34</sup> During 1993 Belarusian officials negotiated another series of implementing agreements with U.S. Ambassador James Goodby, who led the State Department's SSD team, and Gloria Duffy, Deputy Assistant Secretary of Defense and Special Coordinator for CTR Programs.<sup>35</sup>

Belarus was on the road to becoming a non-nuclear weapons state; a road being planned and constructed by the great powers. In February 1993, Stanislav Shushkevich took the next step. He persuaded the Belarus Supreme Soviet Council to debate and vote on START I, Lisbon Protocols, and the NPT Treaty. The favorable vote, 218 to 1 for ratification, confirmed the new nation was both anti-nuclear and pro-Russian.<sup>36</sup> Less than a decade before, the Chernobyl disaster

had blown radioactive winds directly over the region and there were strong sentiments in the Belarusian parliament and public against stationing any nuclear weapons on Belarusian territory. In addition, pro-Russian sentiments were so prevalent in the nation that Belarus' government did not even ask the Russian government for any special security guarantees or financial compensation in return for signing over their nuclear warheads and strategic weapons. Belarusian leaders acknowledged that in security issues their small nation of 10 million was overshadowed by Russia with 150 million people. The two nations, they explained, were connected by language, culture, history, economics, politics and military systems. Shushkevich and the other members of the Supreme Soviet were acutely aware of Russia's presence, and of Belarus' position, lying between Russia and the nations of central Europe.<sup>37</sup> In the fall of 1993 as the nuclear missiles were being removed, Shushkevich told Moscow Radio, "Only Russia has the moral right to possess nuclear weapons on the territory of the former Soviet Union. Belarus, Ukraine and Kazakhstan, despite their considerable scientific



Defense Threat Reduction Agency

SS-25 mobile ICBM

and technical potential could not have created them by their own effort...it is madness to have a nuclear power cell on the main way from Russia to Western countries..."<sup>38</sup>

### American promises and nonproliferation policies: Initial contacts

Immediately after the Belarus Supreme Soviet ratified START in February 1993, President Clinton called Shushkevich to discuss expanding bilateral cooperation, including Nunn-Lugar assistance for Belarus.<sup>39</sup> In March 1993, Secretary of State Warren Christopher announced a Nunn-Lugar grant of \$65 million to assist Belarus' denuclearization efforts.<sup>40</sup> Four months later, Secretary of Defense Les Aspin hosted Belarusian Defense Minister Pavel P. Kozlovsky at the Pentagon and they signed three new implementing agreements. Secretary Aspin declared that the U.S. would commit \$55 million in three areas: \$25 million for environmental restoration of the former SRF SS-25 missile sites; \$20 million for defense conversion under the

Industrial Partnering Program; and \$10 million for military housing and retraining programs for former SRF officers.<sup>41</sup> By October 1993, the two nations had signed multiple new agreements spelling out military and economic cooperative projects and programs. Symbolizing the new U.S.-Belarus relationship, in January 1994 President Clinton and Secretary of State Christopher flew to Minsk for an official visit. During the visit, Clinton promised an additional \$25 million in CTR funds for Belarus.<sup>42</sup> At the same time, Japan pledged \$8.37 million to Belarus for environmental restoration of strategic missile bases.<sup>43</sup>

These American pledges of CTR assistance appeared were rewards to Belarus for removing its inherited strategic weapons. However, Mitchell Reiss, a scholar who examined Belarus' decision to remove the 81 SS-25 missiles to Russia, found that the American pledges of assistance had no real influence on that nation's decision.<sup>44</sup> Russia's influence in the region was substantial; the Russian General Staff had demanded relocation of the strategic missiles and nuclear warheads. Instead, Reiss concluded that the American



William J. Clinton Presidential Library

President William J. Clinton and Secretary of State Warren M. Christopher

CTR pledges had been done for three reasons: rewarding Belarus for ratifying the START and NPT treaties, sending a signal to the governments of Kazakhstan and Ukraine that CTR funds would flow to their nations if they followed the same path, and satisfying the U.S. Congress who was demanding CTR funds be obligated and spent quickly on projects in the emerging new nations.<sup>45</sup> Congress, especially its investigative office, the Government Accounting Office, was extremely critical of how slowly the CTR program was being implemented in 1992-1993.<sup>46</sup> Consequently, there was a sense of urgency when the first U.S. CTR program officers arrived in Minsk and began technical discussions to define specific programs and projects.

In June 1992, Paul Boren had just finished the Defense Department's advanced management course at the Industrial College of the Armed Forces in Washington, D.C., when he returned to the Defense Nuclear Agency (DNA) and became the agency's first program manager for developing and implementing CTR projects.<sup>47</sup> At that time, there were two other agency people, Bill Moon and Major John Petito, working CTR projects for the newly independent states. Michael Evenson, a senior manager, was instrumental in putting the nuclear agency forward into this new arena.<sup>48</sup> Over the next two years, new project officers – John Connell, John Booker, Harry Cook, Mary Ann Miles, Captain Robert Schultz, Lt. Commander Dan Keller and others would join the agency's CTR section.

However in the early years, policy formation, which meant negotiating and signing the diplomatic nation-to-nation CTR legal agreements, took precedence over program definition and project implementation. Yet even during these early months, Boren had a sense that the end of the Cold War had presented a tremendous opportunity. "It was an opportunity," he recalled, "to use radical new ways to solve problems. And those problems were proliferation and weapon systems in possession of countries that were breaking up... [they] didn't have proper command and control; they were nuclear countries, and they, at least at that time, had the spirit of let's get rid of these things. That's an enormous opportunity when nations want to get rid of their nuclear weapons and their nuclear systems..."<sup>49</sup>

Before Boren and the other managers could develop any CTR projects, the Nunn-Lugar legislation required the president to certify that individual successor states to the Soviet Union had met six conditions. The recipient nation

had to make substantial investments of its own resources in dismantlement or destruction of the weapons. They had to forego military modernization programs exceeding their legitimate defense requirements. They had to forego using fissionable components taken from the dismantled weapons in new weapons. They had to agree to facilitate U.S. verification of the destruction. They had to comply with all relevant arms control agreements, and pledge to observe internationally recognized norms of human rights.<sup>50</sup>

Since Belarus was the first of the new nations to ratify the arms control treaties and accept U.S. assistance, it offered a microcosm of the major issues that could arise in defining and implementing the CTR program. Other nations, especially their defense and foreign ministries, observed the unfolding process carefully. All the initial U.S.-Belarus government-to-government CTR umbrella agreements contained certain basic terms and statements. They began with a statement by the recipient nation, Belarus, pledging to follow all measures to achieve a status of a "non-nuclear" state. Then, the two parties selected and



Paul Boren

Defense Threat Reduction Agency

named executive agents, in this case the U.S. Department of Defense and the Belarus Ministry of Defense, which were authorized to negotiate and enter into additional bilateral documents, called implementing agreements. In all of these implementing agreements, Belarus pledged to facilitate U.S. employees and civilian CTR contractors “into and out of” its territory. Military and civilian employees of the U.S. government would have limited diplomatic privileges and immunities, equivalent to those accorded administrative and technical personnel assigned to the U.S. Embassy. Belarus could not bring legal proceedings against the United States, its personnel, contractors or contractor personnel for damages or loss of property related to CTR-funded projects. Any U.S. government personnel working in connection with the CTR program would not be liable for national taxes, fees, or other charges in Belarus. When the U.S. Government, its employees and contractors imported or exported material, equipment, supplies or services, they would not be subject to any customs duties or other charges. Finally, if the U.S. Government hired contractors in Belarus to perform services, those contractors would not be subject to taxes.<sup>51</sup>

As a result, when Boren and his small technical team arrived in Belarus, they came with a heavy bag of tools: U.S. legislative intent, U.S. presidential certification requirements, U.S. defense policy and U.S. implementation agreement rules and regulations. As team chief, Boren did not begin the meeting by opening a money bag filled with \$400 million in Nunn-Lugar funds. Instead, he began with the U.S. Congress’ legislative intent. Every year the Congressional Nunn-Lugar/CTR authorization began with a statement that it was in the “national security” interests of the United States to appropriate funds to further five specific objectives, which were:

- The United States should facilitate the transportation, storage, safeguarding, and elimination of nuclear and other weapons in the newly independent states, including the safe and secure storage of fissile materials derived from the elimination of nuclear weapons, and the dismantlement of ICBMs and their launchers, SLBMs and their launchers, the heavy bombers, and the elimination of chemical, biological, and other weapons’ capabilities.
- The United States should assist these states in preventing the proliferation of weapons of mass

destruction and destabilizing conventional weapons and in establishing verifiable safeguards against their proliferation.

- It was in the interest of the United States to help prevent the diversion of weapons-related scientific expertise to terrorists groups in other nations.
- The U.S. should support the demilitarization of the newly independent states’ defense industries and equipment, and assist these nations in defense conversion to civilian purposes.
- The U.S. military should expand its existing military-to-military programs with the military forces of the newly independent states.<sup>52</sup>

Congress went further with the Nunn-Lugar legislation for 1993, which articulated eight program areas where the Defense Department’s CTR policy officials could negotiate and develop specific projects with the new nation’s defense ministries. These eight program areas fell into three broad areas: destruction and dismantlement, chain of custody, and defense conversion and demilitarization. In defining the CTR assistance programs in Belarus and the other nations, Congress and the Administration held two important assumptions that influenced bilateral negotiations. First, they assumed that the largest and most significant CTR programs would be focused on specific projects for transporting, storing, safeguarding and eliminating nuclear, chemical and biological weapon systems so that these new independent nations would be able to meet their obligations under existing arms control treaties, specifically START I, NPT, START II and the Chemical Weapons Convention. Under START I, for instance, the signatory nation’s obligations were quite specific as to what, where, when and how many strategic missiles, bombers and submarines had to be dismantled and destroyed. Under the NPT Treaty the entire nation’s civilian nuclear materials were subject to international safety standards and inspections.

The second assumption, widely shared in the U.S. Government departments – State, Defense, Energy and National Security Council – was that none of the new nations, except Russia, had the financial resources to carry out safe, secure demilitarization of their nuclear, chemical and biological weapon systems. When the national

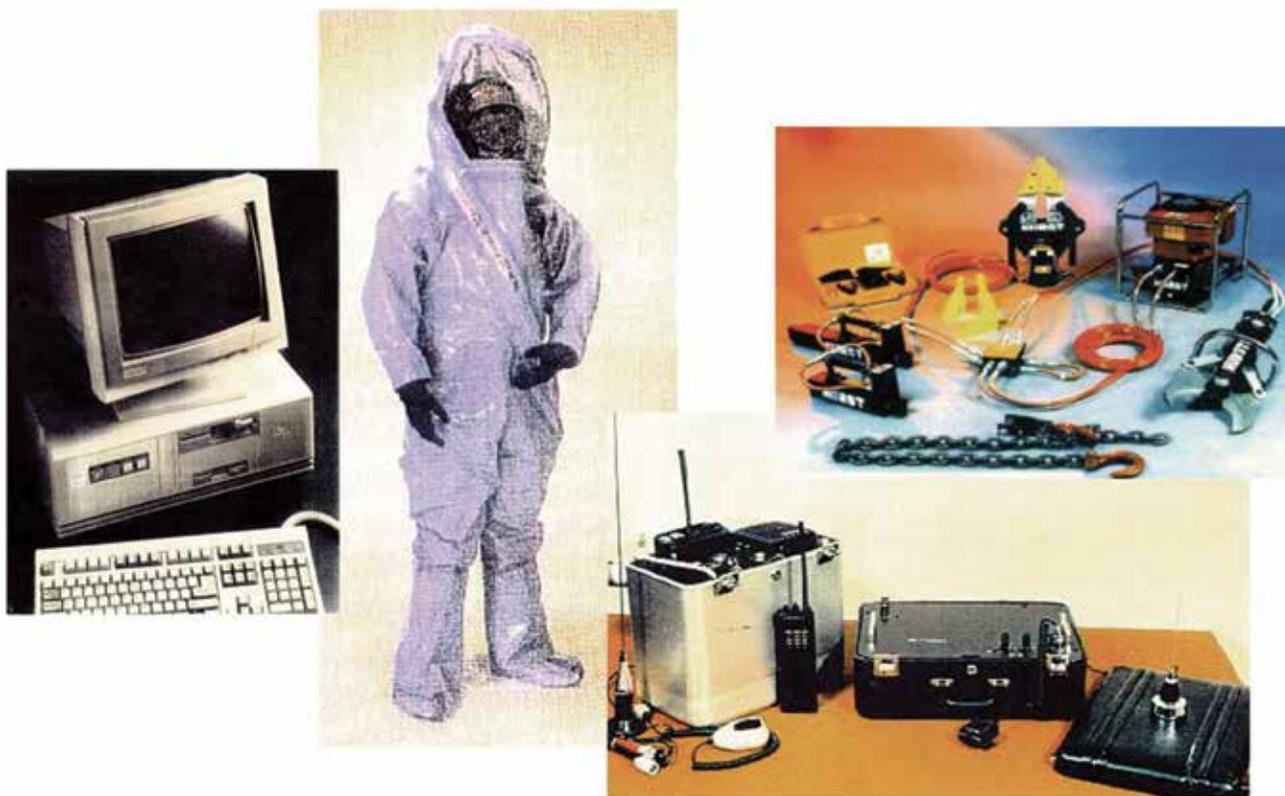
economies of Belarus, Ukraine and Kazakhstan collapsed in 1993-1994, and simultaneously Russia fell into political crisis, Clinton Administration officials agreed with Senators Nunn and Lugar and that CTR should become one of the major elements in the United States' regional, cooperative nonproliferation and security programs with the newly independent states.<sup>53</sup> Their arguments were persuasive, even more so as the national economic crises deepened. For Paul Boren working in Belarus, and for every American program manager negotiating the scope and specifics of CTR projects, this turn of events meant the United States would completely finance every project.

### Initial U.S.-Belarus CTR projects

The first CTR project in Belarus was for emergency response equipment and training.<sup>54</sup> In January 1993, Boren and a small team flew to Minsk for a series of technical meetings with Anatoly Lipliansky, Chief of Belarus Civil Defense, and Ivan Kenik, Minister for Emergency Situations

and Chernobyl Affairs. Although the possibility of a nuclear accident or incident in Belarus was low, the new nation's civil defense officials recognized that operational nuclear weapons – the SS-25 missiles and nuclear warheads – were being transported across their small nation to Russia. They had no control over these movements and, while an actual threat was small, they were keenly aware that consequences of a nuclear accident would be great. As this and other assistance programs were being defined, Belarus' president, in consultation with the cabinet of ministers and the nation's security council, reviewed all major decisions requesting, accepting or rejecting U.S. CTR projects.<sup>55</sup> For this project, the two teams jointly agreed that an emergency response system for Belarus would require the following items: communications equipment, protective clothing, personnel dosimeter equipment, survey instruments, computers for dispersal modeling and prediction analysis, extensive training classes.

Under the law, equipment would be purchased in the United States, using a competitive acquisition process in



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U.S. equipment provided to Belarus

accordance with Federal Acquisition Regulations. Once purchased, the items were to be shipped to Minsk and then installed in the appropriate facilities. In June 1993, 400 sets of protective suits were delivered to the Belarus Civil Defense Headquarters. Three months later, Lt. Commander Dan Keller, CTR project manager, led a small team to Minsk where they delivered an array of equipment: alpha radiation detectors, air monitors, dosimeters, and protective boots. In September, American technicians flew to Belarus and conducted training courses. By December, the "Hot Spot Computer Code" equipment had reached Minsk, followed by delivery of communications and computer network gear in February 1994.<sup>56</sup> In this \$5 million project, more than \$4 million was equipment procured from U.S. firms. Throughout the year, there were problems with equipment delivery, customs, taxes and duties. Ministerial officials in Minsk often interjected themselves into the process, causing further delays.<sup>57</sup> At the same time, everyone in the United States associated with the program recognized there was enormous pressure to get this and other CTR projects underway. Boren, who traveled to Minsk frequently, remembered that American influence, especially when compared to Russian, was quite limited. "But," he said, "there was the idea that you could count on the United States doing something actively to support you. There were a variety of things that were rushed to implementation. There was this madness that you had to implement faster, faster, faster."<sup>58</sup>

Under pressure to initiate more new projects, U.S. Defense Department policy officials met with Belarus and Russian defense officials to discuss assistance for transporting the 81 SS-25 missiles out of Belarus. The government of Belarus had agreed to the movement of SS-25 regiments in October 1992. General I.D. Sergeev, Commander of the Russian SRF, had approved a plan to decommission, transport and deliver missiles, transporters, support equipment and personnel from military bases in Belarus to Russia. Colonel General Yevgeny Maslin, Commander, 12<sup>th</sup> Main Directorate, Russian General Staff, planned and directed the movement of nuclear warheads, via rail, from storage depots in Belarus to nuclear storage depots in Russia. In June 1993, movement of the first SS-25 regiment began across Belarus. These SS-25 regimental movements proceeded slowly over the next three and a half years, concluding in November 1996.<sup>59</sup> U.S. CTR

policy officials defined these bilateral U.S. efforts with the Russian Ministry of Atomic Energy and the Russian Ministry of Defense assistance projects as "Chain of Custody." In 1993-1994, American defense officials worked with Russian MOD officers to devise cooperative projects for acquiring state-of-the-art fissile missile storage containers, armored blankets, and other safety and security equipment. Because of their direct experience, U.S. Department of Energy (DOE) officials served as technical advisors in all meetings and discussions. This program developed slowly over many years because of the massive size of the Russian Federation's nuclear arsenal and secrecy associated with it.<sup>60</sup>

Another U.S. CTR project in Belarus was a joint effort to develop an institutional structure, along with necessary equipment, for a new national export control system.<sup>61</sup> Working with Victor Pas'ko, Minister of Foreign Economic Relations, and officials from the Belarus Customs Committee and the Belarus Frontier Forces, Major Sid Chivers, the U.S. CTR project officer, and U.S. Commerce Department officials, began defining requirements for this \$1 million project. The objective was to develop an export control system that would identify and prevent proliferation of weapons of mass destruction, fissile materials, and nuclear and other technologies from crossing Belarus' national borders. In the beginning months, the project involved several bilateral and multilateral meetings in Minsk on legal and conceptual aspects of the Belarus Supreme Soviet developing a new national export control system. Under the CTR program, U.S. legal experts went to Minsk and provided assistance in drafting new legislation and national regulations. U.S. Customs officials went to Belarus, traveling out to border posts and crossings, where they provided advice on designing and constructing new border posts. When the project was amended, adding more than \$15 million for equipment, Major Chivers and the Belarusian project managers held a series of technical meetings in Minsk and Washington to identify specific equipment for detecting nuclear materials, interdiction and communications. Then, these items were acquired competitively and delivered to Belarus, with the usual delays and difficulties. Further, in August and September 1993, American Customs Bureau officials traveled to Minsk and conducted training for Belarusian enforcement officials.<sup>62</sup>

A CTR project directly related to START compliance was the effort to provide a continuous communications link between the United States and Belarus. Once agreed upon, the project would acquire and deliver modern computers, work stations, fax machines and printers to the Belarus National Agency for Arms Control and Inspections (NAKI).<sup>63</sup> Headed by Major General Yevgeny Nikulin, this small 50-man arms control agency was responsible for escorting U.S. and other national inspectors to Belarus military sites. There the inspectors would record and verify Belarus' compliance with a series of contemporary arms control treaties: START, Intermediate-Range Nuclear Forces Treaty, CFE, and the Vienna Document.<sup>64</sup> General Nikulin also dispatched Belarus' inspection teams to other nations. In the United States, Colonel Richard Wright, a Defense Department CTR program manager, estimated that \$2.3 million would be needed to acquire, deliver, maintain and provide training for the new communications systems. For this project, the basic U.S.-Belarus implementing agreement was signed in Minsk in January 1993. Shortly thereafter, Belarusian military officers and technicians arrived in Washington to discuss computer and other systems, network configuration, delivery schedules and a logistics support plan. By August, a set of interim communications equipment and modems had been shipped and installed in the national arms control agency in Minsk, where training followed. However, because delivery of the permanent communications system was delayed by U.S. officials for more than two years, General Nikulin and MOD officials became frustrated at inflated American promises and lengthy delays.<sup>65</sup>

Another CTR project, directly related to the Nonproliferation Treaty, was an effort to provide Belarus with a new national system of material protection, controls, and accounting (MPC&A) for protecting its nuclear materials used for peaceful purposes. Belarus' Supreme Soviet parliament had ratified the NPT Treaty in February 1993. Under terms of the treaty the nation was subject to inspections by the International Atomic Energy Agency (IAEA). That international inspectorate agency required a system of MPC&A procedures in accordance with international standards and regulations.<sup>66</sup> Even before Belarus ratified the NPT Treaty, U.S. diplomats had initiated discussions with Belarusian ministers on the system. The jointly agreed points were incorporated into the first CTR umbrella agreement, signed October 22, 1992.<sup>67</sup> There were



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New communications equipment for the Belarus National Agency for Arms Control and Inspections (NAKI)

very few civilian nuclear facilities in the nation since Belarus had no nuclear power plants, no uranium-enrichment facilities nor any spent-fuel reprocessing facilities.<sup>68</sup> However, Belarus reported that its Institute of Power Engineering Problems at Sosny possessed approximately 88 pounds of highly enriched uranium, enriched to at least 90 percent. The same institute reported it had at least 400 pounds highly enriched uranium, enriched between 20 and 80 percent.<sup>69</sup> These nuclear materials had to be stored, protected, controlled and accounted for in accordance with IAEA standards. Japan and Sweden also declared they would provide similar assistance to Belarus.<sup>70</sup>

Although this MPC&A project was included in the initial bilateral CTR umbrella agreement, U.S. and Belarus officials did not reach an accord on terms for an implementing agreement until June 1995.<sup>71</sup> In that agreement the U.S. agreed to fund improvements at the Sosny Institute's central alarm system, upgrades for the entire materials protection and control system, nondestructive assays, tamper-indicating devices and personnel training in physical protection. As in most CTR projects, materials were acquired competitively in the United States, then shipped on American carriers to Belarus. There were problems with shipping, customs, taxes, and duties, and reporting.<sup>72</sup> Japanese, Swedish, and American project officials formed a joint committee with Belarus to coordinate the MCP&A assistance. Japan provided a new computer information system to monitor and control storage and movement of nuclear material. They also provided the Belarus institute with modern telecommunications equipment to facilitate data exchanges between the IAEA and the new nation. Sweden delivered additional equipment and technical assistance to Belarus in the spring of 1996.<sup>73</sup> At that time, authority for this effort was transferred from the U.S. DOD to the Department of Energy.

## Strategic Offensive Arms Eliminations projects

In the fall of 1992, Senators Nunn and Lugar steered the FY1993 Defense Department authorization legislation through Congress. It contained three provisions that directly influenced CTR assistance programs for Belarus. For the first time, funds were authorized for an environmental restoration project in a specific nation. Given the inflated title of “Project Peace,” the authorization designated \$25 million for a CTR project in Belarus specifically for environmental restoration of former SRF SS-25 missile launch sites and facilities. The CTR legislation also included



Destruction of SS-25 ICBM launch site

a new provision that supported demilitarization of former Soviet defense industries and their conversion to civilian purposes. A third area specified the expansion of contacts between U.S. military personnel and those national forces in the new independent states.<sup>74</sup> The new legislation opened the way for Ambassador Goodby and Dr. Duffy to negotiate several new CTR implementing agreements between the U.S. and Belarus. During 1993, they negotiated and signed four new agreements: one on the continuous communications link for NAKI, another on establishing new industrial partnerships, a third on expanding military and defense contacts, and a fourth on the environmental restoration of the former SRF missile facilities.<sup>75</sup>

This latter agreement, the one that specified environmental restoration of the SS-25 missile facilities and environmental restoration, was placed into a single CTR program category: Strategic Offensive Arms Elimination (SOAE). Congressional supporters and Defense Department officials had always

insisted that one of the CTR program’s core objectives was to develop and implement cooperative security assistance projects with the new nations’ defense and military forces that would eliminate those strategic weapons systems being reduced by the arms control treaties. A U.S. CTR program manager, Captain John Petito, developed this program by working with Major General Yevgeny Nikulin and Colonel M.Y. Malomedev at the Belarus arms control agency. Belarus was obligated under START to eliminate the 81 SS-25 fixed-site launch facilities located on three military bases at Postavy, Lida and Mozyr. Elimination meant detonation, blowing up the missile launching pads and associated facilities. Destroying the launch pads was straightforward. However, General Nikulin and Ministry of Defense officials explained that the launch facilities held highly toxic SS-25 liquid propellants that had to be disposed of before launch pads could be destroyed. U.S. Defense Department officials agreed and in June 1993, Gloria Duffy signed an implementing agreement with the Belarus ministry to assist in eliminating the SS-25 launch facilities and toxic liquid propellants. In the Pentagon, John Birely, the Nunn-Lugar program manager, designated \$8 million for destroying the SS-25 launch pads, and \$8 million for the safe, secure and environmentally accurate elimination of the residual SS-25 liquid propellant. In June 1996, the CTR program office increased that funding by \$12.9 million, making the total dedicated to Belarus for the Strategic Offensive Arms Elimination projects at \$29.8 million.<sup>76</sup>

Closely associated with this effort was Project Peace, the Congressional initiative to provide U.S. equipment and expertise to the Belarus government for the environmental restoration of the former SS-25 SRF facilities throughout the new nation. The project fell under the Nunn-Lugar program. Congress directed that \$25 million be set aside specifically for this project. In defining the project, Defense Department officials had two main objectives. First, they wanted to encourage Belarus’ Minister of Defense and other ministries to initiate technical discussions on environmental restoration of the SRF military facilities. Second, they wanted to ensure these military facilities would not be used for future rocket forces activities.<sup>77</sup> For this program, the U.S.-Belarus implementing agreement was signed in late July 1993. The following month, Captain Robert Shultz and John Booker of the DNA arrived in Minsk for meetings to define requirements with Major General Nikulin and defense ministry officials.

They began by agreeing on the need for initial environmental surveys to establish a baseline for all subsequent work. Next, they determined the type of technical assistance that would be required for planning, designing and engineering this restoration work. The technical experts determined the type of equipment – graders, bulldozers, trucks, cranes, drills, associated equipment, and on-site training courses required for the environmental restoration projects. In 1994, the U.S. proposed and Belarus accepted a technical recommendation for an analytical chemical laboratory in Belarus to process the data and support the cleanup projects. In January 1995 that laboratory became operational.<sup>78</sup>

## Belarus seeks to divert Nunn-Lugar funds and projects

Here were two projects – Strategic Offensive Arms Elimination and Project Peace, which directly assisted Belarus with its national commitment to comply with the START Treaty and restore the environment at the former missile sites. They were quite specific and quite limited. The government of Belarus had other treaty commitments, which they asserted, were more pressing. Under the Conventional Forces in Europe (CFE) Treaty, Belarus had to eliminate 3,758 tanks, artillery, armored personnel carriers and combat fighters. Between 1992 and 1993, the Belarus defense ministry set up CFE Treaty weapons elimination sites at Borisov, Lesnaya, Baranvichi and Stankovo. The costs to establish, operate and maintain these treaty reductions were considerable and consumed a significant portion of the Ministry of Defense’s budget. When the national economy collapsed in late 1992, Belarus petitioned treaty officials to modify the treaty’s elimination protocols. In June 1993, Belarus’ Minister of Defense stated his nation was under such financial pressure that it could not meet its CFE Treaty obligations. In direct talks with the United States, Belarus requested that Nunn-Lugar funds be redirected for elimination of conventional weapons. Here was an interesting request. Belarus was not requesting suspension of its CFE Treaty reductions, nor a reduction in its treaty quotas, instead it asked for international financial and technical assistance. Belarus officials estimated it would cost \$33 million to eliminate all its CFE Treaty-required conventional weapons.<sup>79</sup>

U.S. officials refused Belarus’ appeal, probably to avoid setting a precedent with Russia, Ukraine and other nations

that had substantially greater CFE Treaty reduction quotas. Nevertheless, Belarus officials persisted in their pleas as economic conditions worsened. They suggested that the 25 other signatory nations establish a voluntary CFE Treaty Support Fund. When he visited Minsk in March 1994, Secretary of Defense Les Aspin acknowledged Belarus’ dilemma, but pointed out that the United States had already obligated \$70 million in Nunn-Lugar assistance funds for the nation.<sup>80</sup> There were two immediate consequences to the Secretary of Defense’s statement. In Belarus, Alexander Lukashenko and his conservative supporters turned to strengthening ties with Russia’s leaders, initiating negotiations on new bilateral trade agreements, border



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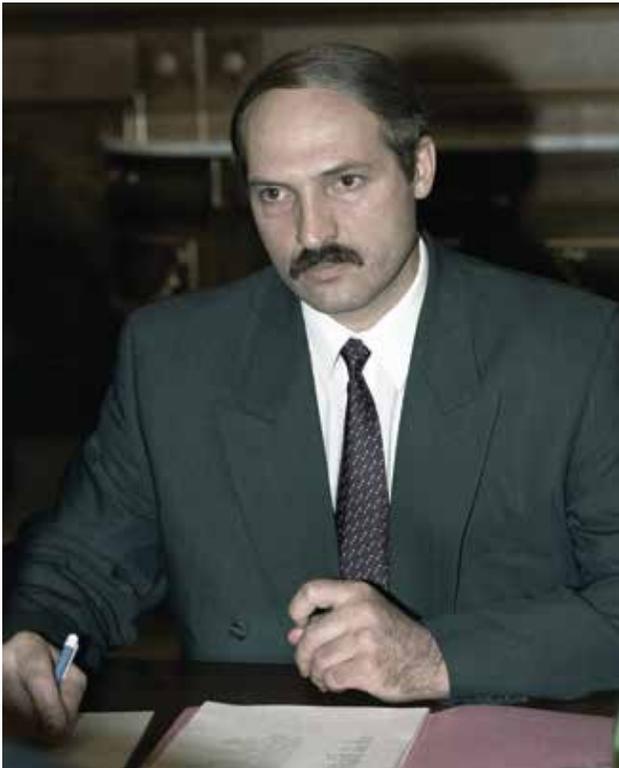
Belarus Minister of Defense Pavel Kozlovskiy (l.) and U.S. Secretary of Defense Leslie Aspin (c.) sign Nunn-Lugar agreement

and customs treaties and new military agreements. In the United States, program managers accelerated efforts in 1994 and 1995 to kick off the Nunn-Lugar projects in Belarus.

Just at this point, the Defense Department’s CTR program management, including U.S.-Belarus programs, came under intense scrutiny. The strategic elimination program was in great difficulty. The \$29.8 million project for Belarus had been designed to provide equipment and services to dispose of the toxic SS-25 missile’s liquid propellant and destroy 81 SS-25 launching pads. However, no money had been spent. Why? When U.S. CTR program managers asked: What was the composition of the liquid propellant, Belarus officials admitted that they did not know the answer. Without this information work could not begin. When the Belarus government requested the data from the Russian Ministry of Defense, it refused to share the information, citing national secrecy laws and that the SS-25 missiles were still active

and operational within the Russian SRF. Belarus and U.S. officials requested that the Russian SRF grant them access to the abandoned SS-25 sites. Russian commanders rebuffed all requests in 1994 and 1995, declaring that they still had operational forces located in Belarus.<sup>81</sup>

As a result, Captain John Petito, the American program manager, tried a different tactic. He invited Belarusian military officers, with the approval of the Nunn-Lugar Program Office, to Washington where they reviewed catalogues of heavy equipment – bulldozers, lifting cranes, concrete



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crushers and earth graders. Once an item was selected, the American program officer worked with acquisition experts to define the performance specifications to purchase it competitively. All government purchases had to be done in accordance with the Federal Acquisition Regulations. However, before any equipment could be advertised for competitive bidding, the law specified that DOD's general counsel had to certify whether the proposed items met all the conditions of congressional appropriation, and the department's comptroller had to certify that funds could be transferred from departmental operational accounts. This

lengthy process took time. Then the Defense Department's CTR Office had to notify Congress about the specific project before any funds could be spent. This step took time as well. Once all these certifications and approvals were in hand, the actual process of acquiring equipment under the complex federal acquisition system could begin. That also took time – months, if not a year or more to complete. Once the equipment was acquired, a separate contract had to be issued competitively before the equipment could be shipped to Belarus. Delay after delay in the United States frustrated everyone, and consequently American credibility deteriorated.<sup>82</sup>

Finally, John Connell, a new program manager at the Defense Nuclear Agency for SOAE projects in Belarus, Russia, Ukraine and Kazakhstan, persuaded the Defense Department's senior Nunn-Lugar policy officials in 1995 to issue a competitive contract to an American demolition firm to do the work in Belarus. In March 1996, Controlled Demolition, Inc. won the contract. However, start of the work in Belarus was delayed repeatedly by the Belarusian Ministry of Defense.<sup>83</sup> For more than a year, the American firm was denied access to the former SS-25 missile sites.<sup>84</sup> By that time, President Alexander Lukashenko had negotiated and signed a new treaty binding Belarus and Russia into a union, both economically and militarily. Authoritarian, nationalistic, anti-western and pro-Russian, Lukashenko's government arrested some European and American diplomats and citizens and harassed others to the point that the United States and European nations suspended diplomatic relations.<sup>85</sup> Among the many consequences of this break was that the Nunn-Lugar programs in Belarus completely collapsed.

Before that happened, however, one U.S.-Belarus project showed signs of success. Project Peace, the environmental restoration program, delivered some equipment, services and training specialists to Belarus. It purchased and sent to Minsk a modern, analytical chemical laboratory and it awarded a contract to Arthur D. Little, Inc. for remediation planning, training and technical assistance. Some remediation work by Belarusian firms was done in 1996-1997.<sup>86</sup> One analyst of the various U.S.-Belarus CTR programs and projects, Vyachaslau E. Paznyak, Director of the International Institute for Policy Studies in Minsk, concluded that the environmental site restoration effort was "one of the more successfully implemented programs."<sup>87</sup>

## New U.S. initiatives: Military housing and Defense conversion

In spite of all the setbacks, Belarus was where one of the most innovative cooperative programs began. In the FY1993 Nunn-Lugar appropriation, Congress approved the Industrial Partnering Program, with the objective of helping the new states convert and privatize their excess military-industrial capacity through financial assistance for new joint business ventures. Senators Nunn and Lugar included this program in the annual appropriation with the strong encouragement of U.S. Secretary of Defense Les Aspin and his deputy, William J. Perry. This CTR program encouraged American firms and investors to work with enterprises and firms in the weapons manufacturing industries to assist them in switching to producing civilian consumer products. Given Secretary Aspin's attention, the program office in the Pentagon quickly allocated \$20 million for new programs in Belarus. Paul Boren, one of the most experienced program managers, flew to Minsk in the fall 1993 to begin negotiations.<sup>88</sup>

Following policy guidance, Boren broke the \$20 million program into two parts: \$10 million for new U.S.-Belarus joint business ventures, and \$10 million for constructing new housing units and equipping retraining centers for SRF officers being forced into retirement. In the housing area, Secretary Aspin and his senior policy officials recognized that in the former Soviet Union it had been customary for retiring or displaced military officers to receive an apartment from the state. While the United States had no obligation to keep this commitment, Boren explained that "the idea was that [in Belarus] we would provide housing to help demobilize them."<sup>89</sup> Consequently, Boren and his team along with a small cadre of senior Belarusian Ministry of Defense officials, traveled from Minsk to Lida, site of the 49<sup>th</sup> Guards Missile Division and 27<sup>th</sup> Guards Missile Army. There they discussed the situation of Belarusian military men who would be left without housing for themselves and their families. There was little doubt that the Russian government would not provide any housing assistance for these rocket forces stranded in western Belarus. Ministry officials estimated that the rocket division's displaced officers would need 600 apartments. After evaluating the request, however, U.S. contracting officials in Washington projected that the \$10 million in available funds would finance less than 200 units. In July 1995, the CTR program office granted a contract to the ABB

SUSA construction company to build apartments in Foulash, Belarus. Over the next 18 months, 127 apartments were built. In addition, Boren, as the CTR program manager set up and equipped two centers for retraining decommissioned rocket forces officers in Lida and Minsk.<sup>90</sup>

The other half of the \$20 million Industrial Partnering Program was intended to establish joint Belarus-U.S. business ventures. This effort began in the fall 1993 when Boren met with Ministry of Defense officials in Minsk. After a series of briefings and meetings, the ministry selected and nominated three Belarusian firms for the joint venture program: Integral, a manufacturer of integrated computer circuits; BELOMO, a firm that made night vision devices, range finders and satellite components for the Soviet military; and Minsk Computer, which had designed and manufactured main frame computers for the Soviet Ministry of Defense. Within the U.S. the CTR program office had allocated \$10 million for assistance contracts, if the Belarusian firms paired with an American investor or a manufacturing company. However, it was unclear just how CTR funds could finance these joint ventures. Boren recalls discussing the issue with Bill Moon: "I said I have an idea. Let's take the example of Integral, who makes computer chips. We can place a contract with them for say \$2 million... [and they] will produce computer chips of commercial value, and we may provide some necessary equipment to make sure that they do commercial value chips as opposed to military hardened chips. Then, Integral could sell them on the open market."<sup>91</sup> However, in 1993 and 1994 there were no U.S. firms willing to commit to a 50-percent joint venture in Belarus, as required by U.S. law. One reason for the reluctance was that the national parliament of Belarus had not established the legal structures for foreign ownership, or partial ownership, of businesses.

To allay concerns in Washington, Boren recommended that the Belarusian enterprise directors travel to Washington and discuss their plans with American managers and investors. In the Pentagon at every level, reaction to the concept of the Defense Department financing joint industrial ventures using CTR funds was negative. Boren recalls that "at that point it was interesting, because nobody knew what to do, and [my concept] was so radical that they said: 'We'll stick Boren out there, he will do it, and he'll die, then we will step in.'"<sup>92</sup> That situation changed fundamentally in January 1994, when William J. Perry became the Secretary of Defense. In the spring Boren briefed the concept to him;



Secretary of Defense William J. Perry

Secretary Perry approved it and indicated he wanted to go farther, suggesting they set up a revolving defense enterprise fund to leverage the profits if any of the joint ventures were successful. In 1994, Secretary Perry persuaded Congress to add into the CTR legislation an authorization of \$40 million for a new Defense Enterprise Fund, which grew to \$66.67 million over the next four years.<sup>93</sup> During 1994, three American firms decided to become joint partners with local firms in Belarus. In January 1995, KRAS-Corp-Integral began manufacturing integrated computer chips for the Eastern European market. In the same month, the other two joint venture firms started production: Byelokorp Scientific-BELOMO, which manufactured laser pointers, and FSG-Minsk Computer Amalgamation, which made radio frequency computer modems and battery chargers.<sup>94</sup>

In spring of 1995, Secretary of Defense Perry considered the Industrial Partnering Program and Defense Enterprise Fund a great success. He convened a major international conference with the motto, "Building Industrial Partnerships in the Former Soviet Union," in Washington in April 1995.<sup>95</sup> Cosponsored by the Department of Defense and the U.S. Commerce Department, the conference included Michael

Jordan, Chairman and CEO of Westinghouse Corporation, Ruth Harkin, President of the Overseas Development Corporation, Oleg Davidov, Russia's Deputy Prime Minister and Harold P. Smith, Jr., Assistant to the Secretary of Defense for Atomic Energy. By this time, Secretary Perry regarded the CTR effort as the United States Government's most important program with the newly independent states. Perry told the 250 conference delegates that he had just returned from a trip to Russia, Ukraine and Kazakhstan where there was an unfolding story of "cooperation" in assisting these nations to dismantle their nuclear weapon systems, safely and ahead of treaty schedules. Defense conversion, Perry reported, was working in Russia, Ukraine and Belarus. He explained that the U.S. Government's assistance would be in "finding" potential defense conversion projects, "facilitating" any government-to-government investment and marketing issues, and then "financing" the joint ventures. Calling it "seed money" in the classical terminology of American venture capitalists, Secretary Perry concluded: "We cannot control events in the former Soviet Union, but we can influence them."<sup>96</sup>

Perry was correct; he could not control events. In Belarus, not one of the new joint ventures lasted out in 1995. Belarus' national economy was collapsing, and when the government turned pro-Russian and anti-western, all business ventures with American firms became suspect. Emboldened by these political developments, local enterprises insisted on taking possession of the new equipment, which had been purchased with CTR and private American funding. According to Boren, the enterprise directors wanted to show the Lukashenko government that they, not American interests, controlled the joint business ventures. Shortly thereafter, all the U.S. firms and investors backed out, production and sales declined, and one firm even fell into bankruptcy. By the time Belarus and Russian leaders signed the Treaty of Union in April 1996, the defense conversion projects in Belarus had collapsed. A year later, all CTR projects ended when the United States and Belarus suspended diplomatic relations.

### Evaluating the U.S.-Belarus Nunn-Lugar CTR effort

When Belarus agreed to return the 81 SS-25 missiles and nuclear warheads to the Russian Federation it became a non-nuclear weapons state. U.S. leaders promised Belarus CTR assistance, more than \$70 million by 1996, to carry out

an array of nonproliferation and demilitarization projects: emergency response, export controls, material protection, control and accounting, continuous communications links, military housing, site restoration, and propellant elimination. The path from promises to projects, however, was beset by difficulties. Congress included numerous conditions in the basic legislation; Department of Defense officials adhered to onerous legal and acquisition requirements; and U.S.-Belarus CTR policy negotiations were often protracted, with layers of bureaucracy requiring approval before assenting to the basic implementing agreements. As a result, U.S. CTR program managers found they could not define, develop and deliver on all the numerous American promises, no matter how many trips to Minsk or how many joint meetings in Washington.

Viewed from Belarus, American promises had many flaws. As a fledgling nation, Belarus had enormous post-Cold War economic, industrial and social issues, yet American assistance projects seemed to be focused almost exclusively on denuclearization and nonproliferation. In the first years after independence, Belarusian officials anticipated receiving large-scale economic and social welfare aid from the United States. Instead, when American CTR policy and program managers flew into Minsk they brought with them proposals for projects that were quite limited and rather specific. The limited nature of U.S. interest became painfully obvious to the Belarusian government when in the mid-1990s the U.S. was unresponsive to its request for assistance to fulfill its obligations under the CFE Treaty.

When Belarusian ministers asked why CTR program managers insisted on exclusively using U.S. contractors and purchasing U.S. equipment, American officials pointed to Congress and its legislative intent. When military commanders requested 600 housing units for displaced strategic rocket officers, the U.S. CTR program manager could only fund and construct one third of the requirement. Perhaps the greatest difficulties of all, however, were the frequent and incessant delays in the United States as program managers worked to identify, acquire, receive and ship the American-made equipment and materials to Belarus. Within the Belarusian government there were some officials who saw that American assistance could be useful in developing their nation's nonproliferation and demilitarization programs. However, opponents in Belarus outnumbered proponents of these programs.

The 1994 election of Alexander Lukashenko as president of Belarus accelerated the downward spiral. The Lukashenko government turned away from engagement with Western nations and began forging renewed political, economic and military ties with Russia and the other newly independent states. Authoritarian and pro-Russian, the Lukashenko government developed a foreign policy hostile toward the United States and Europe. In 1997, diplomatic relations ruptured and the United States and European nations withdrew their ambassadors. The forces compelling this diplomatic estrangement were personal, given President Lukashenko's view of Western nations. Domestically, there was a strong desire to return to a command economy. Regionally, many wished to reestablish pro-Russian relations. These forces were far greater than the questions concerning effectiveness of the small American CTR nonproliferation, demilitarization and defense conversion projects. In consequence, those projects were swept up and discarded like numerous other western post-Cold War initiatives.

Although it was not recognized at the time due to the pressures of developing projects in other nations, Belarus was an important testing ground for how Nunn-Lugar would work with the newly independent states. As noted previously, the nonproliferation and demilitarization assistance programs offered to Belarus were quite limited and very specific. It became clear that Nunn-Lugar funds would not become an American defense assistance program supporting the governments of the new states; a fact that U.S. program managers learned quickly while discussing, defining and defending Nunn-Lugar projects in Minsk with the ministers, military commanders and senior officials of the Belarus government. Another important outcome of the Belarus experience was that virtually all the American officials who developed and managed Nunn-Lugar projects there – Boren, Moon, Booker, Petito, Connell, and others, would in subsequent years manage CTR projects and programs in other locations across Russia, Ukraine and Kazakhstan. In Belarus these managers learned that working with the new government, its defense and energy ministries, and its military forces required presence, patience and persistence. There was an intricate dynamic between the program's scope, the new government's expectations, the Defense Department's rules and regulations, and the U.S. Congress. That dynamic had to be learned in the field.

Endnotes

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<sup>1</sup> William E. Odom, *The Collapse of the Soviet Union*, (New Haven: Yale University Press, 1998), pp. 376-377.

<sup>2</sup> Ibid.

<sup>3</sup> Shannon Kile, "Chronology of Conflict Developments in Former USSR," in *Stockholm International Peace Research Institute (SIPRI) Yearbook 1992: World Armaments and Disarmament*, (New York: Oxford University Press, 1992), pp. 160-163. According to Paul D'Anieri, "Ukrainian Defense Policy and the Transformation of the Armed Forces," in D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, (Boulder: Westview Press, 1999), pp. 233-261; Ukraine's new leaders sought establish an independent Ukrainian military as one of the "essential and undeniable" markers of the new Ukrainian state.

<sup>4</sup> Odom, *Collapse of the Soviet Military*, pp. 383-385. To separate out the Soviet Military Forces on Ukrainian territory, Marshal Shaposhnikov issued an order on 3 January 1992 transferring the authority to command the conventional forces to the Ukrainian state. Within a week, President Kravchuk and General Konstantine Morozov, Minister of Defense, issued the Ukrainian oath of allegiance to the senior officers. When the senior officers in three military districts refused to take the oath, Kravchuk fired them.

<sup>5</sup> Kostiantyn P. Morozov, *Above and Beyond: From Soviet General to Ukrainian State Builder*, (Boston: Harvard University Press, 2000), Appendix 11, pp. 256-257.

<sup>6</sup> Foreign Minister Anatoly Zlenko, News Conference, Kiev, Ukraine, 14 April 1992, cited in *Arms Control Reporter*, 611.B.728.

<sup>7</sup> On 5 April 1992, President Kravchuk signed a decree, "About Urgent Measures on the Structuring of the Ukrainian Armed Forces." All military formations located on Ukrainian territory were subordinated to the Ukraine Ministry of Defense. For the strategic nuclear forces, this decree stipulated that the Ukrainian MOD would have "administrative" control. See, *ITAR-TASS*, 6 April 1992. Cited in chapter, "Ukrainian Defense Policy and the Transformation of the Armed Forces," in D'Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, pp. 238-239. Also, Mitchell Reiss, *Bridled Ambition: Why Countries Constrain Their Nuclear Ambitions*, (Washington, D.C.: Woodrow Wilson Center Press, 1995), pp. 105-106.

<sup>8</sup> Joseph P. Harahan and John C. Kuhn, *On-Site Inspections Under the CFE Treaty: A History of the On-Site Inspection Agency and CFE Treaty Implementation, 1990-1996*, (Washington, D.C.: On-Site Inspection Agency, U.S. Department of Defense, 1996), pp. 85-89. Jane M. O. Sharp, "Conventional Armed Forces in Europe" in *SIPRI Yearbook 1992*, pp. 591-634.

<sup>9</sup> Odom, *Collapse of the Soviet Military*, pp. 384-385. Harahan and Kuhn, *On-Site Inspections Under the CFE Treaty*, pp. 88-90. Sharp, "Conventional Armed Forces in Europe," in *SIPRI Yearbook 1992*, pp. 602-634.

<sup>10</sup> Odom, *Collapse of the Soviet Military*, pp. 386-387.

<sup>11</sup> For the location and identification of these forces of the former-Soviet Union see, Rodney W. Jones and Mark G.

McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts*, 1998, (Washington, D.C.: The Carnegie Endowment for International Peace, 1998), pp. 25-48, 71-101.

<sup>12</sup> Quote from Gen. Pyankov cited in *ITAR-TASS*, 3 July 1992, in *FBIS-SOV-1992*, 6 July 1992.

<sup>13</sup> Interview with Yevgeny Zherebenkov, Moscow Radio Rossi, 3 July 1992, cited in *FBIS-SOV 1992*, 7 July 1992. See also, John W.R. Lepingwell, "Ukraine, Russia, and the Control of Nuclear Weapons," *RFL/RL Research Report*, vol. 3, no. 8 (19 February 1994), pp. 12-13.

<sup>14</sup> Mykhtyuk, V.A., General-Lieutenant, Commander 43<sup>rd</sup> Rocket Army, "Report: Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," located at the Defense Threat Reduction Agency, Chapter 1, p. 20. Reiss, *Bridled Ambition*, pp. 105-106.

<sup>15</sup> *Interfax*, 6 July 1992, in *FBIS-SOV 1992*, 7 July 1992.

<sup>16</sup> Pavel Felgenhauer, *Moscow Nezavisimaya Gazeta*, 8 October 1992, cited in *FBIS-SOV 1992*, 8 October 1992.

<sup>17</sup> Quote cited in *ITAR-TASS*, 16 October 1992, in *FBIS-SOV 1992*, 19 October 1992.

<sup>18</sup> *Interfax*, Moscow, 4 November 1992. "Deputy Defense Minister Details Costs," *FBIS-SOV 1992*, 5 November 1992. Fred Hiatt, "Russian Legislature Ratifies START Pact; Further Arms Cuts Seen Facing Tougher Road," *Washington Post*, 5 November 1992.

<sup>19</sup> Lepingwell, "Ukraine, Russia, and the Control of Nuclear Weapons," *RFL/RL Research Report*, vol. 3, no. 8 (19 February 1994), pp. 4-20.

<sup>20</sup> Press Release, Permanent Mission of Ukraine to the United Nations, 12 November 1992.

<sup>21</sup> Dunbar Lockwood, "Nuclear Arms Control," in *SIPRI Yearbook 1992*, pp. 554-560.

<sup>22</sup> Douglas L. Clarke, "The Impact of START-2 on the Russian Strategic Forces," *RFE/RL Research Report*, vol. 2, no. 8 (19 February 1993), pp. 65-70.

<sup>23</sup> Mikhail Alexandrov, *Uneasy Alliance: Relations Between Russia and Kazakhstan in the Post-Soviet Era, 1992-1997*, (Westport: Greenwood Press, 1999), p. 204.

<sup>24</sup> Agreement published in *Interfax*, 26 October 1992.

<sup>25</sup> Gunnar O. Arbman and Charles L. Thornton, "Russia's Tactical Nuclear Weapons Part I: Background and Policy Issues," *FOI Report, Part I*, (Stockholm: Swedish Defense Research Agency, 2003), pp. 18-19. See also, Joshua Handler, "The September 1991 Presidential Nuclear Initiatives and the Elimination, Storing and Security Aspects of Tactical Nuclear Weapons," in *Tactical Nuclear Weapons: Time for Control*, (September 2002).

<sup>26</sup> Arbman and Thornton, "Russia's Tactical Nuclear Weapons," *FOI Report, Part I*, p. 19.

<sup>27</sup> International Institute for Strategic Studies, *The Military Balance, 1995-1996*, pp. 113-114.

<sup>28</sup> Mykhtyuk, V.A., General-Lieutenant, Commander 43<sup>rd</sup> Rocket Army, "Report: Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," located at the Defense Threat Reduction Agency.

<sup>29</sup> Joseph Cirincione, Jon B. Wolfsthal, and Miriam Rajkumar, *Deadly Arsenals: Tracking Weapons of Mass Destruction*, (Washington, D.C.: Carnegie Endowment for International Peace, 2002), p. 317.

<sup>30</sup> Ibid, pp. 317-320.

<sup>31</sup> "Belarusian Supreme Council Ratified Start and the NPT," in *Arms Control Reporter*, 1993, p. 611.B.775. See also, Reiss, *Bridled Ambition*, p. 133.

<sup>32</sup> Vyachaslau E. Paznyak, "Nunn-Lugar Program Assessment: The Case of Belarus," in John M. Shields and William C. Potter, eds., *Dismantling the Cold War: U.S. and NIS Perspectives on the Nunn-Lugar Cooperative Threat Reduction Program*, (Cambridge: Harvard University Press, 1997), pp. 152-167.

<sup>33</sup> Agreement Between the United States of America and the Republic of Belarus Concerning Emergency Response and the Prevention of Proliferation of Weapons of Mass Destruction, 22 October 1992, Washington, D.C.

<sup>34</sup> See, Agreement Between the United States of America and the Republic of Belarus Concerning Emergency Response and the Prevention of Proliferation of Weapons of Mass Destruction, 22 October 1992. Agreement Between the United States of America and the Republic of Belarus Concerning the Provision of Assistance Related to the Establishment of Export Control Systems to Prevent the Proliferation of Weapons of Mass Destruction for the Republic of Belarus, 22 October 1992. Agreement Between the United States of America and the Republic of Belarus Concerning the Provision of Emergency Response Equipment and Related Training in Connection with the Removal of Nuclear Weapons and Nuclear Weapons Delivery Systems from the Republic of Belarus, 22 October 1992. Agreement Between the United States of America and the Republic of Belarus Concerning the Provision of Materials and Service for the Establishment of a Continuous Communication Link, 15 January 1993.

<sup>35</sup> Initially the U.S. State Department used the term, Safe, Secure, and Dismantlement (SSD) Talks to convey the diplomatic level of the bilateral negotiations with Russia and the other nations. In 1993, the Secretary of Defense for Policy began using the term Cooperative Threat Reduction (CTR) to emphasize the programming aspects. In the FY1993 appropriation bill, Congress adopted the term Cooperative Threat Reduction. Henceforth, CTR became the standard term covering all aspects of the Nunn-Lugar programs.

<sup>36</sup> *ITAR TASS*, 4 February 1993, in *FBIS-SOV*, 5 February 1993. Also see, *Arms Control Reporter*, 1993, p. 611.B.775.

<sup>37</sup> Reiss, *Bridled Ambition*, pp. 129-138.

<sup>38</sup> *Arms Control Reporter*, 1993, p. 611.B.813.

<sup>39</sup> Reiss, *Bridled Ambition*, p. 136.

<sup>40</sup> "Belarus Receives Two Benefits for Ratifying Start and the NPT," *Arms Control Reporter* 1993, p. 611.B.748.

<sup>41</sup> Fact Sheet, Office of the Assistant Secretary of Defense for Public Affairs, "Signing of Agreements Between the U.S. Department of Defense and the Belarus Ministry of Defense," 22 July 1993. The \$55 million in assistance was part of the \$65 million announced by Secretary Christopher in March 1993.

<sup>42</sup> "Clinton Promised Belarus \$25 Million in Additional Aid," 15 January 1994 cited in *Arms Control Reporter-1994*, p. 611.B.196.

<sup>43</sup> Jones and McDonough, *Tracking Nuclear Proliferation*, p. 72.

<sup>44</sup> Reiss, *Bridled Ambition*, p. 135.

<sup>45</sup> Reiss, *Bridled Ambition*, p. 136.

<sup>46</sup> For analysis and context see, Gloria Duffy, "Cooperative Threat Reduction in Perspective," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 23-39. To reference the specific legislative bill see, U.S. Congress, "Cooperative Threat Reduction Act of 1993," Section 1202.

<sup>47</sup> Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, 26 May 2000.

<sup>48</sup> According to Boren, there was some opposition to taking on this new mission.

<sup>49</sup> Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, 26 May 2000.

<sup>50</sup> Theodor Galdi, et al., *The Nunn-Lugar Cooperative Threat Reduction Program for Soviet Weapons Dismantlement: Background and Implementation*, (Washington, D.C.: Congressional Research Service, 1994).

<sup>51</sup> For these basic terms see, Agreement Between the United States of America and the Republic of Belarus Concerning Emergency Response and the Prevention of Proliferation of Weapons of Mass Destruction, 22 October 1992, Washington, D.C.

<sup>52</sup> Amy F. Woolf, *Nuclear Weapons in the Former Soviet Union: Location, Command, and Control*, (Washington, D.C.: Congressional Research Service, 1997).

<sup>53</sup> Jason D. Ellis, *Defense By Other Means, The Politics of US-NIS Threat Reduction and Nuclear Security Cooperation*, (Westport: Praeger, 2001), pp. 77-84.

<sup>54</sup> Briefing, "Cooperative Threat Reduction Program," Dr. John H. Birely, Deputy Assistant to the Secretary of Defense for Atomic Energy, 10 November 1993.

<sup>55</sup> Paznyak, "Nunn-Lugar Program Assessment," in Shields and Potter, eds., *Dismantling the Cold War* (1997), pp. 171-172.

<sup>56</sup> Briefing, Colonel Bob Dickey, "Nunn-Lugar Program Elements: Belarus," Defense Nuclear Agency, January 1994.

<sup>57</sup> Paznyak, "Nunn-Lugar Program Assessment," in Shields and Potter, eds., *Dismantling the Cold War* (1997) pp. 171-172.

<sup>58</sup> Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, 26 May 2000.

<sup>59</sup> Jones and McDonough, *Tracking Nuclear Proliferation*, pp. 71-72. Also see, Paznyak, "Nunn-Lugar Program Assessment," in Shields and Potter, eds., *Dismantling the Cold War* (1997) pp. 167-192.

<sup>60</sup> Paznyak, "Nunn-Lugar Program Assessment," in Shields and Potter, eds., *Dismantling the Cold War* (1997) pp. 167-175.

<sup>61</sup> Briefing, Colonel Bob Dickey, "Nunn-Lugar Program Elements: Belarus," Defense Nuclear Agency, January 1994.

Interview, Colonel Bob Dickey, Deputy Chief, Cooperative Threat Reduction Directorate, DTRA, with Joseph P. Harahan, Historian, 26 May 2000.

<sup>62</sup> Briefing, Colonel Bob Dickey, "Nunn-Lugar Program Elements: Belarus," Defense Nuclear Agency, January, 1994.

## With Courage and Persistence

Paznyak, "Nunn-Lugar Program Assessment," in Shields and Potter, eds., *Dismantling the Cold War* (1997) pp. 167-175.

<sup>63</sup> Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, 26 May 2000.

<sup>64</sup> Paznyak, "Nunn-Lugar Program Assessment," pp. 178-181. See also, Woolf, *Nuclear Weapons in the Former Soviet Union*, pp. 14-15.

<sup>65</sup> Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, 26 May 2000. Paznyak, "Nunn-Lugar Program Assessment," in Shields and Potter, eds., *Dismantling the Cold War* (1997) pp. 188-189.

<sup>66</sup> Jessica Eve Stern, "Cooperative Activities to Improve Fissile Material production, Control, and Accounting," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 309-343.

<sup>67</sup> Agreement Between the United States of America and the Republic of Belarus Concerning Emergency Response and the Prevention of Proliferation of Weapons of Mass Destruction, 22 October 1992. (Umbrella Agreement).

<sup>68</sup> Jones and McDonough, *Tracking Nuclear Proliferation*, pp. 71-73.

<sup>69</sup> Report, Monterey Institute of International Studies, *Nuclear Successor States of the Soviet Union*, no. 4 (May 1996), pp. 5, 31.

<sup>70</sup> Jones and McDonough, *Tracking Nuclear Proliferation*, pp. 71-73.

<sup>71</sup> See U.S. Department of Defense, "Second Semi-Annual Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," submitted in accordance with Section 1207 of the Cooperative Threat Reduction Act, 30 September 1995. The specific implementing agreement was "Agreement between the Department of Defense of the United States of America and the Ministry of Defense of the Republic of Belarus Concerning Control, Accounting, and the Physical Protection of Nuclear Material to Promote the Prevention of Nuclear Weapons Proliferation," 23 June 1995.

<sup>72</sup> Stern, "Cooperative Activities to Improve Fissile Material Production, Control, and Accounting," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 309-343. See also the Belarus section in the Department of Defense, "Second Semi-Annual Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," submitted to Congress under Section 1207, Cooperative Threat Reduction Act, 30 September 1995.

<sup>73</sup> Stern, "Cooperative Activities to Improve Fissile Material Production, Control, and Accounting," in Shields and Potter, eds., *Dismantling the Cold War*, p. 330. Report, Monterey Institute of International Studies, *Nuclear Successor States of the Soviet Union*, no. 4 (May 1996), pp. 5, 31. Also, Paznyak, "Nunn-Lugar Program Assessment," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 187-188.

<sup>74</sup> Department of Defense, "Quarterly Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," submitted to Congress, 20 September 1993. This report describes to new and continuing projects for

environmental restoration, for demilitarization of former Strategic Rocket Forces' bases, and the elimination of fixed structures at SS-25 ICBM bases in Belarus.

<sup>75</sup> Ibid. See also, Department of Defense, "First FY1995 Semi-Annual Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," submitted in accordance with Section 1207 of the Cooperative Threat Reduction Act, 31 March 1995.

<sup>76</sup> Briefing, DoD, CTR Program Office, "CTR Agreed Program with Belarus, 1992-1997," 20 May 1997. Paznyak, "Nunn-Lugar Program Assessment," pp.178-180.

<sup>77</sup> Department of Defense, "First FY1995 Semi-Annual Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," submitted in accordance with Section 1207 of the Cooperative Threat Reduction Act, 31 March 1995. See also, Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, 26 May 2000.

<sup>78</sup> The details of this project are described in the Department of Defense, "First FY1996 Semi-Annual Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," 31 March 1996, submitted in accordance with Section 1207 of the Cooperative Threat Reduction Act, Section V-8.

<sup>79</sup> Harahan and Kuhn, *On-Site Inspections Under the CFE Treaty*, pp. 239-240.

<sup>80</sup> *Arms Control Reporter 1994*, pp. 407.B.505-507.

<sup>81</sup> Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, 26 May 2000. Interview with Jim Reid, Director, Cooperative Threat Reduction Policy Office, Office of the Secretary of Defense, with Dr. Joseph P. Harahan, Historian, DTRA, 1 May 2000. Interview, Ambassador James Goodby, U.S. Ambassador for the Safe, Secure, and Dismantlement Talks, 1993-1994, with Joseph P. Harahan, Historian, DTRA, Department of Defense, 14 March 2005.

<sup>82</sup> Interview, Mr. John Connell, Chief, Strategic Nuclear Arms Elimination Division, Cooperative Threat Reduction Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Department of Defense, Washington, D.C., 16 February 2001. See also, Department of Defense, "Second-Half FY1996 Semi-Annual Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," 30 September 1996, submitted in accordance with Section 1207 of the Cooperative Threat Reduction Act, Section V-10-V-11.

<sup>83</sup> Ibid.

<sup>84</sup> In March 1994, Belarus signed a five year agreement with the Russian Federation on planning and coordinating military activities. In February 1995, the two governments signed a treaty of friendship and cooperation, which specific aspects of the agreement devoted to open borders between the nations. See, *SIPRI Yearbook 1995*, p. 782.

<sup>85</sup> See, Timothy Snyder, *The Reconstruction of Nations: Poland, Ukraine, Lithuania, Belarus, 1569 -1999*, (New Haven: Yale University Press, 2003), pp. 278-284.

<sup>86</sup> See Department of Defense, "First-Half FY1997 Semi-Annual Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," 31 March 1997, submitted in accordance with Section 1207 of the Cooperative Threat Reduction Act, Section V-10-V-11. The U.S. State Department did not recertify Belarus to receive U.S. CTR assistance in early 1997; consequently there were no new or continuing projects after 17 February 1997.

<sup>87</sup> Paznyak, "Nunn-Lugar Program Assessment," in Shields and Potter, eds., *Dismantling the Cold War*, p. 181.

<sup>88</sup> For program description and activity see, Department of Defense, "First-Half FY1996 Semi-Annual Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," 31 March 1996, submitted in accordance with Section 1207 of the Cooperative Threat Reduction Act, Section V-13-V-14.

<sup>89</sup> Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, 26 May 2000.

<sup>90</sup> Ibid. Paznyak, "Nunn-Lugar Program Assessment," p. 181.

<sup>91</sup> Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, 26 May 2000.

<sup>92</sup> Ibid.

<sup>93</sup> Ellis, *Defense By Other Means*, pp. 38-39, 182-183.

<sup>94</sup> See, Department of Defense, "First-Half FY1996 Semi-Annual Report on Program Activities to Facilitate Weapons Destruction and Nonproliferation in the Former Soviet Union," 31 March 1996, submitted in accordance with Section 1207 of the Cooperative Threat Reduction Act, Section V-13-V-14. See also, Paznyak, "Nunn-Lugar Program Assessment," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 181-183.

<sup>95</sup> *Proceedings, Building Industrial Partnerships in the Former Soviet Union*, Conference Industrial College of the Armed Forces, Washington, D.C., April 19, 1995

<sup>96</sup> Dr. William J. Perry, Secretary of Defense, "Keynote Address," in *Proceedings: Building Industrial Partnerships in the Former Soviet Union*, Industrial College of the Armed Forces, April 19, 1995, pp. 21-25.



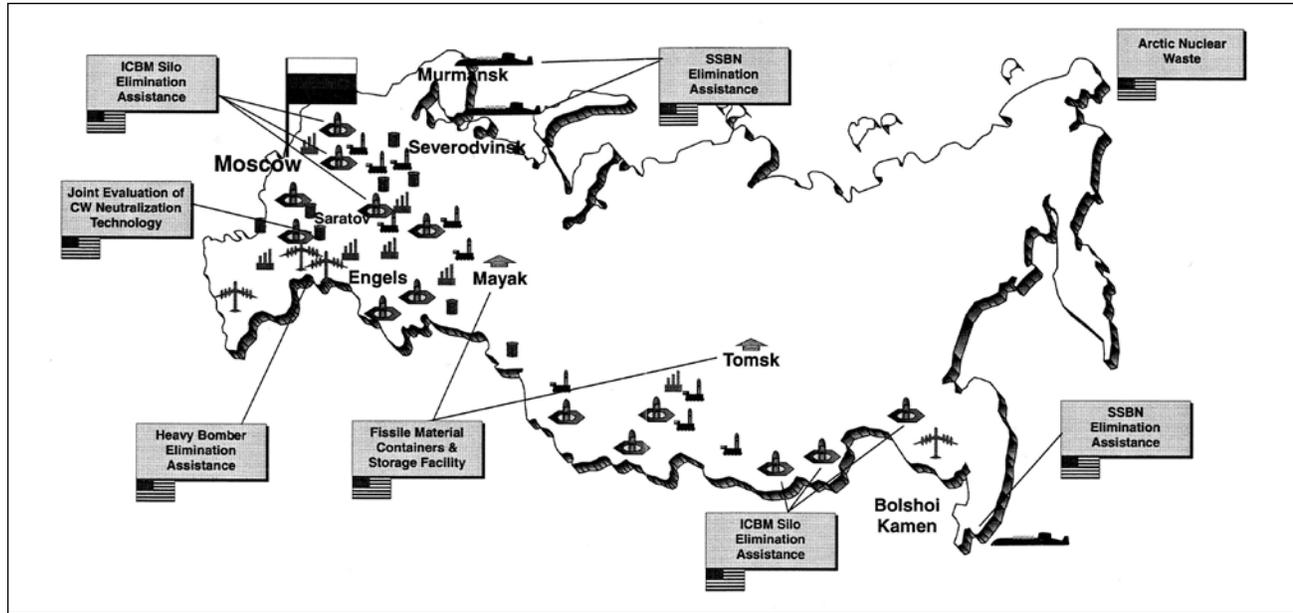
## **Securing Russia's Nuclear and Chemical Weapons Arsenals: Treaties, Agreements, and Nunn-Lugar Assistance, 1992-1995**

If Belarus was sending out nuclear weapons and warheads, Russia was taking them in. The swift collapse of the Soviet Union in late 1991 and rapid establishment of the Commonwealth of Independent States (CIS) Armed Forces obscured what was really going on across the region. Independence and the devolution of nuclear forces and weapons created an entirely new set of issues for Russian leaders and senior military officers. Suddenly, the Russian General Staff was forced into a situation that one senior general characterized as “massive restructuring” of Russian nuclear forces.<sup>1</sup> In fact, the restructuring had begun even before independence. Between 1989 and 1991 the Soviet General Staff had planned and carried out massive military redeployment operations that moved via rail and truck thousands of tactical nuclear warheads from Eastern European nations and the Soviet republics to central nuclear storage depots in Russia. Nuclear weapons specialists from the General Staff's 12<sup>th</sup> Main Directorate had traveled to all the republics and supervised removal and transport of more than 5,600 tactical nuclear warheads. These redeployment operations were continuing when the Soviet Union collapsed. Specifically, Soviet/Russian military officers secured and transported 2,345 tactical nuclear warheads from Ukraine, 1,180 from Belarus, 330 from Kazakhstan, 325 out of Lithuania, 185 from Latvia, 200 out of Estonia, 125 from Turkmenistan, 105 from Uzbekistan, 90 out of Moldova, 320 from Georgia, 200 from Armenia, and approximately 75 warheads each from Tajikistan, Azerbaijan and Kyrgyzstan.<sup>2</sup>

However, the mission of securing, transporting and safely storing these nuclear warheads was only one part of

the Russian Defense Ministry and General Staff's new set of responsibilities in 1992 and 1993. They also organized and conducted massive troop movements, returning Soviet/Russian military forces from Central European, Baltic and other nations to the Russian Federation. During 1992, the General Staff planned and carried out the movement to Russia of 15 army divisions, with 100,000 troops, 2,000 tanks, 23 artillery, rocket and air defense brigades, and 36 fighter and helicopter companies.<sup>3</sup> The following year, they organized an even larger withdrawal of military forces into Russia: 117,900 military officers and men, 52,100 pieces of combat equipment and 826,000 tons of supplies.<sup>4</sup> At the same time, the General Staff ordered military units throughout the Russian army to prepare to implement the new 26-nation Conventional Armed Forces in Europe (CFE) Treaty.<sup>5</sup> Before this major multinational treaty could go into effect, the Soviet Union's 3.7 million conventional military forces had to be divided among the 15 newly independent states. The Russian General Staff developed a detailed plan for partitioning all the stationed forces across the former Soviet Union.

In May 1992, Russian Minister of Defense Pavel Grachev explained to the new nations' defense ministers who were meeting in Tashkent how the partition of forces would work. Quickly, the ministers endorsed Grachev's plan, and within a matter of weeks CFE Treaty negotiators had established national reduction quotas for each of the new nations, including Russia. When the CFE Treaty entered into force in July 1992, the Russian Ministry of Defense (MOD) and General Staff had established elimination centers across



Defense Threat Reduction Agency

Nunn-Lugar Cooperative Threat Reduction projects in Russia, 1995

Russia for liquidating thousands of military tanks, artillery pieces, armored carrier vehicles, tactical fighters and attack helicopters. At the same time, foreign inspection teams started arriving in Russia to carry out inspections of the army's conventional military units.<sup>6</sup>

Few western observers appreciated that when the Soviet Union collapsed in December 1991, there was no prior military planning, no negotiations on partitioning military forces, no agreements on strategic weapons and warheads, and no treaties between the new nations. The intercontinental ballistic missiles (ICBM), long-range bombers, submarines, conventional, strategic, air defense and interior forces were left on the battlefield of the Cold War.<sup>7</sup>

### Post-Cold War generals emerge

Colonel General Yevgeny Maslin commanded the General Staff's 12<sup>th</sup> Main Directorate, a large and secret directorate with the mission of securing and controlling nuclear weapons and munitions, receiving nuclear weapons and components from laboratories, testing arming and safety mechanisms, and delivering operationally ready weapons to military commands in the field. Working closely with all branches of the armed services, specifically with the Strategic Rocket Forces (SRF), nuclear navy, and long-range bomber forces, the 12<sup>th</sup> Main Directorate's 30,000 officers

and technical specialists traveled out to the operational commands and conducted safety and security inspections of the nuclear devices, components and fissile materials. They were responsible for storing and guarding excess weapons in centralized national nuclear storage facilities. General Maslin's directorate was also responsible for verification and accountability of the location, condition and movement of every nuclear warhead during its service life.<sup>8</sup> From 1991 to 1993, the 12<sup>th</sup> Main Directorate was extraordinarily active. General Maslin recalled that "the immediate result of the Soviet Union's disintegration was to place thousands of tactical and strategic nuclear weapons in the hands of suddenly independent states. Russia immediately undertook urgent measures to ensure operational control over formerly Soviet tactical nuclear warheads...by transporting the weapons back to Russian territory. The return to Russia of several thousand tactical nuclear weapons was a central measure to prevent possible theft and proliferation, and was completed by May 1992."<sup>9</sup>

Another Russian General Staff officer who was extremely active was Lieutenant General Vladimir I. Medvedev. He directed the Russian Federation's Nuclear Risk Reduction Center, the organization responsible for implementing the new nation's arms control treaty commitments. Positioned on the General Staff, General Medvedev and the center's arms control officers had worked with hundreds, indeed

thousands of U.S. treaty inspectors monitoring compliance with the Intermediate-range Nuclear Forces (INF) Treaty from 1988 to 1991.<sup>10</sup> Working in 10-man teams, these American inspectors traveled across the former Soviet Union to inspect 114 INF nuclear missile sites and to observe the dismantlement and destruction of nearly 1,850 Soviet/Russian intermediate-range missiles.

An American officer, Major General Roland Lajoie, led the United States' inspectorate, the On-Site Inspection Agency (OSIA). In the 1980s, Lajoie commanded the U.S. Military Liaison Mission in Berlin, and served as the U.S. Army Attaché to the Soviet Union and the U.S. Defense Attaché to France. He was fluent in Russian and French. As chief of the American inspectorate, the general flew to Moscow frequently. He met with General Medvedev and together they traveled out to remote Soviet missile elimination sites. Later, in the mid-1990s, Lajoie would lead the Cooperative Threat Reduction Program Office.

Before the Soviet Union collapsed, General Medvedev and his senior staff officers had traveled to Vienna, Austria where they served on diplomatic negotiating teams drafting the complex inspection and escort protocols for the CFE

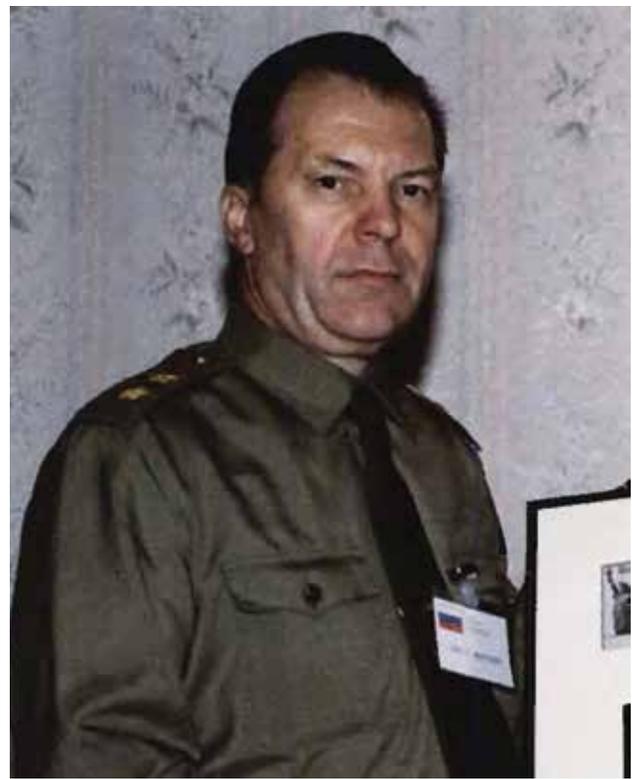
Treaty. In the 1990s, Medvedev recruited, trained and commanded a large cadre of Soviet/Russian inspectors and escorts who would monitor this multinational treaty. He traveled extensively to the United States and Western Europe, inspecting military bases and treaty sites. From the beginning of the new nation, Medvedev was a strong supporter of the Russian government's policy of complying with multinational arms control treaties. Later, he supported accepting Nunn-Lugar assistance within key ministries of the Russian government and General Staff.<sup>11</sup> Both of these generals, Medvedev and Lajoie, had extensive treaty inspection experience, language skills and personal contacts with many general officers serving in Russia, Europe and the United States. That experience would prove invaluable in defining and resolving issues in the various Nunn-Lugar assistance programs and projects.<sup>12</sup>

In 1992, Yeltsin's government embraced all of the arms control treaties where arms reductions were reciprocal, scheduled and verifiable. Yeltsin and his senior ministers signaled in its initial weeks that the Russian Federation would remain a party to all existing treaties – INF, CFE and START I, and that they would support new treaties, then in



National Archives - Still Picture Branch

Major General Roland Lajoie



Defense Threat Reduction Agency

Lieutenant General Vladimir I. Medvedev



Colonel General Yevgeny  
Maslin

negotiations. Acting quickly, Yeltsin signed the Open Skies Treaty (April 1992), the START II negotiating agreement (June 1992), and the START II Treaty (January 1993). Then in late January 1993, the Russian foreign minister signed the Chemical Weapons Convention (CWC) Treaty in Paris. Each of these new treaties, except the aerial monitoring treaty, required the Russian General Staff to plan for and implement the decommissioning, transporting, dismantling and elimination of thousands of strategic and conventional weapons and thousands of tons of chemical weapons.<sup>13</sup> These requirements were new ones; they were post-Cold War and post-Soviet Union issues for the Russian military and government.

In addition, the Russian General Staff worked on resolving the issue of “nuclear succession” of the new states. In April 1993, Yeltsin declared that the Russian government’s principal foreign policy objective was to become the sole nuclear weapons successor state to the Soviet Union. If diplomatic and military negotiations were successful, it meant the General Staff had to be ready to secure and transport thousands of strategic nuclear warheads from Belarus, Kazakhstan and Ukraine to Russian military nuclear security depots.<sup>14</sup> The man responsible for this mission, General Maslin, described the new strategic situation as a particularly “vexing” problem for military planners. “Arms reduction, nuclear security and nonproliferation efforts are,” Maslin concluded, “by their nature, closely linked.”...<sup>15</sup> Since these three areas fit with American Nunn-Lugar initiatives in 1991-1993, they became starting points in negotiating specific programs and projects.

## Russian Ministers and People’s Deputies consider U.S. Nunn-Lugar assistance

In the months immediately following the Soviet Union’s collapse, U.S. Secretary of State James Baker, his deputy, Reginald Bartholomew, and General William Burns, then Special Envoy to the Safety, Security and Dismantlement of Nuclear Weapons Committee traveled to Moscow frequently. They met with President Yeltsin, Foreign Minister Kozyrev, Marshal Shaposhnikov and other senior officials to discuss Russian independence, nuclear issues and security assistance. Empathetic, especially concerning nuclear issues, these senior American diplomats and the technical delegation focused on defining a series of cooperative and bilateral security projects. Throughout the negotiations, it was assumed that Nunn-Lugar funds would finance these programs. In early 1992, first Bartholomew, then Burns met with Victor N. Mikhailov, Minister of Atomic Energy.<sup>16</sup>

Mikhailov had close ties to President Yeltsin and he led the Russian Federation’s team in negotiating terms for accepting and using Nunn-Lugar assistance. Mikhailov held a doctorate of technical science and was a member of the Russian Academy of Sciences. He had served as the scientific director of the All-Russian Scientific Research Institute of Experimental Physics before being selected as director of the Ministry of Atomic Energy (MinAtom) in 1992. A powerful figure, Professor Mikhailov combined a reputation as a leading nuclear physicist with the authority of directing one of Moscow’s power ministries and a xenophobic attitude toward the United States. A strident Russian nationalist, he was both a difficult person and the leading negotiator. Serving with him on the Russian Federation’s negotiating team were representatives of the Ministries of Foreign Affairs and Defense as well as the General Staff.<sup>17</sup>

Following negotiations in the spring, Mikhailov traveled to Washington for the Yeltsin-Bush summit meeting in June 1992. There, the two presidents signed the first U.S.-Russian Federation framework agreement for Nunn-Lugar assistance. It authorized assistance programs in three broad areas: safe and secure transportation; storage and destruction of nuclear, chemical and other weapons; and proliferation prevention.<sup>18</sup> This presidential agreement served as the legal basis for all the U.S.-Russian Nunn-Lugar/CTR programs for the next seven years. At the same summit, senior Russian and American officials initialed three new Nunn-Lugar

implementing agreements, setting terms and dates for the U.S. to purchase and deliver armored blankets, emergency response equipment and fissile materials containers to Russia. All these agreements were between the U.S. Department of Defense and the Russian Federation's Ministry of Atomic Energy. In July, August and October, additional Nunn-Lugar technical agreements were signed covering specific terms for American assistance in destroying Russia's chemical weapons, providing conversion kits for special nuclear weapons railcars and designing a large modern nuclear weapons storage facility.<sup>19</sup>

Immediately after the June summit, parliamentary committees in the Congress of People's Deputies in Moscow examined the new U.S.-Russian framework agreements. Since negotiations had been conducted in secret, the deputies had questions about why the Yeltsin government had excluded them. They also questioned what specific American conditions the Russian government would be forced to accept to get the security assistance. They had questions about the type of American equipment being offered. For instance, would American officials be given access to Russia's secret nuclear facilities, and what was the status of the Russian government's programs for securing and safeguarding secret technologies used in the dismantlement processes?<sup>20</sup>

As Yeltsin's chief negotiator, Mikhailov testified before the Russian Congress' Committee on International Affairs. He explained that the U.S. Congress had authorized \$400 million in assistance to Russia for the reduction and dismantling of nuclear weapons, and asserted that during negotiations he had rejected categorically several U.S. demands. First, Russia would not allow any monitoring of its military and scientific research programs, nor would it allow American inspectors to examine any programs that were developing modern, prototype weapons. Russia, he asserted, would not meet the U.S. Congress' demands for assurances that work was being done strictly for defensive purposes, nor would the Russian government allow the U.S. to monitor any stage of its nuclear weapons dismantlement. President Bush and his administration, Mikhailov declared, were told that these conditions were under "no circumstances" acceptable to the Russian government. The new agreements, he assured the parliamentarians, had been examined by the ministers of four Russian government agencies: Ministry of Atomic Energy, Ministry of Defense, Ministry of Foreign Affairs and Ministry of Security. He explained that all issues connected

with nuclear materials and nuclear weapons technologies were kept secret, and that there was no information on this issue exchanged from either side.<sup>21</sup>

The committee chairman, Yevgeny Ambartsumov asked: "Is this an act of pure altruism by the United States?" Another, Mikhail Astafiev, Deputy for the Dzerzhinsky Electoral District in Moscow, questioned American motives in giving financial and materiel assistance and then asking for access to secret facilities and nuclear technologies.<sup>22</sup> Mikhailov, like Yeltsin, was a blunt and forceful man. "I have waited for this question," he replied. "Why is it the interest of the United States? After all, it is \$400 million...What's really going on here? Why did they make this offer? It's a reasonable question...I'll tell you: for two reasons."<sup>23</sup> First, he said, that under the present conditions in Russia there was a fear among senior officials that there could be an accident during transport, disassembly and storage of nuclear weapons. An accident would be regarded as a "local" event, but he thought it could lead to serious consequences throughout Russia. Second, the minister explained that Bush and Yeltsin signed the new arms reduction treaties and had publicly announced unilateral presidential decrees that would further reduce their nation's strategic nuclear weapons systems. Mikhailov declared that without a doubt the United States would carry through on these new agreements, which meant it would deactivate and disassemble its nuclear weapons and warheads on schedule, and in accordance with international treaties and the presidential declarations.

"We thought," Mikhailov explained, "that if we don't succeed in providing safe and secure transport and storage of nuclear materials, [then] we will be forced to halt disassembly." He determined that dismantling the weapons could not proceed "unless you have the necessary conditions – both safety and security."<sup>24</sup> As the hearings ended, Foreign Affairs Committee chairman Ambartsumov concluded that the United States was acting with "reasonable self-interest" in putting forth the nonproliferation and cooperative security initiatives.<sup>25</sup> In those years, Russian governing officials were pro-Western, although many skeptics continued to question U.S. motives and objectives.

In the fall 1992, the Congress of People's Deputies Defense Committee conducted new hearings. They recommended the Russian parliament ratify the START Treaty, but with several conditions that would have to be met before the Russian government would implement the treaty. Belarus, Ukraine

and Kazakhstan would have to ratify the START Treaty, Lisbon Protocols, and sign and ratify the Nuclear Non-Proliferation (NPT) Treaty before Russia would implement the START Treaty. In doing so, these nations would have to acknowledge that Russia was the sole nuclear successor state to the Soviet Union. With these explicit conditions, the Duma debated and ratified START treaty 157 to 1.<sup>26</sup> The Defense Committee also held hearings on the U.S.-Russian framework/umbrella agreement and implementing agreements on the Nunn-Lugar security assistance initiatives. Minister of Atomic Energy Mikhailov, and Foreign Minister Kozarev reviewed the American cooperative security offer and testified on the Yeltsin government's interpretation of the agreements. They assured the parliamentarians once again that the Americans would not have access to sensitive Russian military sites. Further, MinAtom's technicians and security experts would be responsible for inspecting all equipment entering and leaving Russia under the agreements. Despite these assurances, some of the Congress' parliamentarians were incredulous that the Russian government would accept any security assistance from its former enemy. One skeptic remarked that the "only place to find free cheese is a mouse trap."<sup>27</sup>

Despite this sentiment, Defense Committee members and a majority in the Duma recommended the government accept this American security assistance program. According to Alexei Arbatov, deputy chairman of the Defense Committee, Russia's START Treaty elimination requirements were not the major factor in considering whether to accept or reject the American Nunn-Lugar funds.<sup>28</sup> Instead, Arbatov thought two other issues were persuasive. First, there was the rationale of using the security assistance to ensure physical security and nonproliferation of nuclear warheads and weapons traversing Russia. Each year, the General Staff had to transport thousands of nuclear warheads across the nation. Even more important, according to Arbatov, was that Senators Nunn and Lugar had publicly declared in 1992 and again in 1993 that there would be dismantlement assistance for the governments of Belarus, Ukraine and Kazakhstan if they signed and ratified the arms control treaties. Since Russia's dominant national security goal was to secure the return of all nuclear warheads and weapons from these nations, Arbatov thought the Russian government would support any foreign assistance program, like Nunn-Lugar, that would help it achieve its larger strategic objective.<sup>29</sup>



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Congress of People's Deputies, Russian Federation

In addition to assisting the government to meet its internal nuclear safety and security requirements and foreign policy objectives, some Russian ministers thought Nunn-Lugar funds could be used to supplement their budgets. Mikhailov had testified in June 1992 that the initial Nunn-Lugar agreements would bring in \$100 million, or 40 billion rubles, which he declared would take a significant burden out of an “already stressed” national budget. Now in December, the promised level of assistance was larger and contained specific projects for delivering modern dismantling equipment – steel cutters, guillotines and arc torches – that the Ministry of Defense did not possess.<sup>30</sup>

Finally, as the Duma’s Defense Committee debated the question in the fall 1992, the ripples of rising inflation grew into a mounting tsunami that gripped the entire Russian economy. The government seemed incapable of managing the economy, which led to a plunge in Yeltsin’s approval ratings. Simultaneously, Ukraine’s government asserted publicly that it owned the nuclear weapons and warheads located on its national territory. The Russian Duma’s response to declining tax revenues was to slash the budgets of every government ministry, especially the Atomic Energy and Defense Ministries, General Staff and military services. General Maslin summed up the situation in Moscow during those dark days: “To correctly interpret any event, you must have a clear understanding of circumstances in which it occurred. In the beginning of the 1990s, these circumstances included the collapse of the Soviet empire, wild disorder, sharp economic collapse, loss by millions of people of their values, the absence of central leadership, and the ambitions of the political elites in the newly independent states.” Maslin recalled that for well-informed people, like senior officers on the General Staff, the situation on nuclear security and nonproliferation was simply “alarming.”<sup>31</sup>

### **U.S.-Russian nonproliferation consensus develops, amidst confusion and bureaucratic differences**

For Russia these were tumultuous times, full of confusion and conflict. In this atmosphere, Russian Defense and Nuclear Energy ministers were particularly concerned with nuclear safety and management and control of fissile materials. They viewed proliferation of nuclear weapons and materials as real threats to the new Russian nation.<sup>32</sup> The

American Nunn-Lugar CTR program offered a promising solution. Not only could the assistance be used for safe and secure transport of nuclear materials, but it could be used to influence the governments of Belarus, Kazakhstan and Ukraine into signing, ratifying and implementing arms control and nonproliferation treaties, and in the process, returning all nuclear weapons to Russia. Within the Russian government’s “power” ministries - Defense, Foreign Affairs, Security, and Atomic Energy – there was recognition that the American assistance initiatives might also provide modern technologies for the treaty-required reductions in nuclear and chemical weapons. Finally, given the rise of terrorism in Russia, any assistance program that strengthened the nonproliferation regime for controlling nuclear accidents and incidents would be seriously considered.

Looking back, the offer of Nunn-Lugar assistance seemed to match perfectly with the Russian government and its ministries’ perception of the nation’s post-Cold War responsibilities and threats. In reality, however, the match was not quite as perfect. U.S. Defense Department program directors in Washington would announce multiple projects



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to Congress, giving the appearance that the Nunn-Lugar program had powerful momentum in providing assistance to the new Russian government.<sup>33</sup> In Moscow, Russian ministers and General Staff military officers would learn of these project announcements through the press and would demand consultation and coordination, complaining publicly that little, if any, actual assistance ever materialized.<sup>34</sup> The two governments also had differing ways of reaching decisions, different ways of implementing programs, and even distinctive ways of measuring success and completion. Bureaucratic rigidity, distance, and time exacerbated these differences. Finally, there was the element of trying to define and carry out projects involving secret nuclear weapons systems, with a nation and general staff committed to a national military strategy of nuclear deterrence using these same weapons and systems. Just how difficult it was can be seen in the first set of joint projects from 1992 to 1995.

### Nunn-Lugar projects in Russia

The very first Nunn-Lugar agreement Bush and Yeltsin signed at the Washington Summit meeting on June 17, 1992 was the "Agreement Between the Russian Federation and the United States of America Concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation." Why were Russian officials so concerned with the "safe and secure" transportation of nuclear materials? Russian analyst, Oleg Bukharin, estimated that in late 1991 the Soviet Union's nuclear arsenal contained approximately 25,000 nuclear warheads. Of that number, the USSR had declared it possessed strategic weapons, with 10,271 warheads, certified in the initial START I Treaty data exchange. The remaining approximately 14,000 were assumed to be tactical nuclear warheads.<sup>35</sup> Once the Soviet Union fractured into 15 new nations, the reported START Treaty data listed 225 attributed strategic nuclear warheads in Belarus, 1,980 in Ukraine, 1,400 in Kazakhstan, and 7,600 in Russia.<sup>36</sup>

The Russian General Staff's 12<sup>th</sup> Main Directorate had the mission of controlling and accounting for each nuclear warhead from manufacture to delivery to the military forces in the field. Then, after the warhead's operational life expired, the directorate was responsible for transporting warheads from the SRF's bases and storage areas to the Ministry of Defense's nuclear weapons storage sites. Most

of these nuclear munitions had been manufactured in the mid-1970s, and by the early 1990s the rocket force's replacement rate was between 1,600 to 1,700 warheads per year. Using special military rail and road transport vehicles, the 12<sup>th</sup> Main Directorate organized, transported and secured the movement of thousands of nuclear warheads across Russia each year. After the fall of the Berlin Wall in 1989, the General Staff assigned this directorate the mission of decommissioning and transporting to secure depots in Russia all of Soviet military forces' tactical nuclear warheads located in storage depots in Central European nations. Then in 1991, this mission expanded to include all tactical warheads located in the former republics of the Soviet Union. In the Soviet era, most of the nuclear weapons storage depots and facilities had been located in remote, sparsely populated areas. According to a Defense Department report, the Soviet Union had more than 500 storage sites for securing nuclear warheads and materials. In the late 1990s, the Russian Ministry of Defense planned to consolidate nuclear warheads and materials into approximately 100 sites.<sup>37</sup> This consolidation forced further movement of warheads and nuclear materials across the nation.

General Maslin, commander of the 12<sup>th</sup> Main Directorate, recalled that "the specialists who worked with nuclear weapons at that time were at a certain loss due to a growing number of tasks – we had to transport nuclear munitions throughout Russia by railroad and vehicles more often than before...We had to think about ways to enhance transportation security."<sup>38</sup> Maslin and the General Staff concluded that one of the most vulnerable stages in the nuclear chain of custody system was during transportation of warheads and nuclear materials. To address this urgent issue, the first bilateral Nunn-Lugar implementing agreement focused on providing immediate assistance for the Russian military in transporting nuclear warheads and materials.

At the Washington Summit in June 1992, Donald Atwood from the Department of Defense, and Victor Mikhailov from the Ministry of Atomic Energy, signed an agreement designating up to \$5 million to purchase and deliver 500 sets of nylon and kevlar armored blankets.<sup>39</sup> These blankets would be used to enhance the protective capacity of the Russian-manufactured nuclear weapons containers and vehicles in transport. Defense Department officials delivered the first 200 sets of six-panel nylon blankets, which had

been taken from U.S. Army stocks in Europe, to Russian MinAtom officials in July 1992. The following December, a contract was awarded for purchase of 250 sets of 10-panel kevlar blankets.<sup>40</sup> This contract was the first in the Nunn-Lugar program and set a pattern for future projects. The armored blankets were delivered to Moscow by June 15, 1993.<sup>41</sup> How were they used? According to General Maslin, Russian military officers and technicians used these blankets to protect “warheads from fire and other consequences of possible accidents.”<sup>42</sup> The special blankets also served as protection from small-arms fire and potential terrorist attacks as weapons were being transported from storage depot sites to dismantlement facilities in Russia.<sup>43</sup>

A second Nunn-Lugar implementing agreement, also signed during the Bush-Yeltsin summit, specified the types and quantities of equipment and training for an emergency response system.<sup>44</sup> Working together, specialists and military officers from MinAtom, the 12<sup>th</sup> Main Directorate and program officials from the Department of Defense defined the type, number and training requirements for an

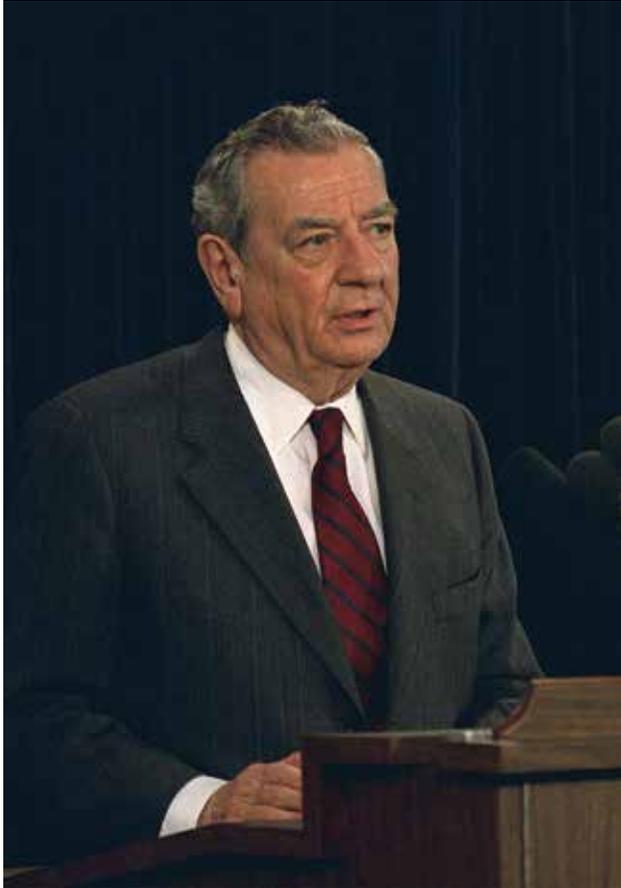
emergency response system. These were practical military and ministry men, possessing knowledge of their nation’s nuclear arsenals and its vulnerabilities. Within MinAtom, the 5<sup>th</sup> Main Directorate was the organization responsible for nuclear weapons research and development. It was responsible for managing and operating the weapons design laboratories, nuclear research facilities, and for assisting the MOD in the transportation of nuclear warheads and nuclear materials to MinAtom’s dismantlement plants and nuclear storage facilities. Led by Georgy Tsytkov, MinAtom’s 5<sup>th</sup> Main Directorate worked closely with General Maslin and the 12<sup>th</sup> Main Directorate, General Staff.<sup>45</sup> Both Tsytkov and Maslin worked with John Birely from DOD and the small CTR staff in developing requirements for the emergency response system.

In September 1992, the Defense Department’s Nunn-Lugar program managers estimated it would take \$10 million to acquire more than 1,000 items in emergency response equipment and deliver them to Russia. Included in these items were: emergency access equipment (“jaws of life”



George Bush Presidential Library

Bush-Yeltsin Summit in Washington D.C., June 1992



Department of Defense

Donald J. Atwood

cutting tools), radiological and chemical protective clothing, personnel dosimeter and radiological sampling equipment, special communications equipment, and personal computers with specialized software. In the negotiations, Russian leaders emphasized that they accepted the assistance to outfit special emergency response teams in both the Ministry of Atomic Energy and the General Staff's 12<sup>th</sup> Main Directorate. At the same time, they insisted their nuclear storage sites were secure and safe. Air Force Colonel Bob Dickey managed this CTR program in the Defense Department. It took more than a year for the bulk of equipment and training systems to be acquired, inspected, shipped and delivered to Moscow. Specific items and delivery dates were:<sup>46</sup>

- Sets of "Jaws of Life," delivered January and April 1993
- Protective suits & special packing materials, delivered April 1993
- "Violinist III" Alpha radiation detectors, delivered April-July 1993

- Fiber scopes and training materials, delivered July 1993
- Training on the Fiber scopes and Violinists, completed July 1993
- Communications equipment, delivered August 1993
- Packaging truck, delivered September 1993
- Portable Integrated Video System, delivered October 1993
- Training on Portable Integrated Video System, delivered in October-Nov 1993
- Delivery and training on Hot Spot Computer Codes, December 1993
- Delivery of communications gear and computer network, February 1994

As this equipment arrived in Russia, the nation's economy was deteriorating and its political stability was unraveling. In September 1993, Yeltsin ordered the Russian parliament to disband. In October, he sent Russian military forces into the parliament building to evict the recalcitrant deputies from power. In the Chechnya region, rebel factions challenged the authority of the Russian government and army. Chechen groups exploded bombs in the outer suburbs of Moscow. The central government felt forced to act in hopes of ending the provincial insurrection and urban disorder. Yeltsin and Grachev sent a Russian army to Chechnya to crush the rebels, but the confrontation did not go well as local rebel groups held off an uncoordinated and poorly led Russian army. In these dangerous times General Maslin ordered a series of training exercises at Russian military storage sites to test nuclear emergency procedures and newly-acquired American equipment. Maslin reported that the exercises confirmed the "high reliability" and "effectiveness" of these emergency procedures and equipment.<sup>47</sup> In the next few years, this emergency response program would be expanded explicitly on the request of General Maslin and the senior officers at the General Staff's 12<sup>th</sup> Main Directorate.

Another early Nunn-Lugar cooperative program, one involving a series of projects to enhance Russia's nuclear weapons transportation security, sprung from discussions with Minister Mikhailov, General Maslin and their staffs. As noted earlier, Maslin believed that transportation via rail across Russia was the most vulnerable piece of the General Staff's system for storing and protecting nuclear weapons and

materials. "He was very proactive," recalled Bill Moon, an American CTR program manager, "in engaging the Americans on these issues. He was definitely the leader in Russia."<sup>48</sup> The 12<sup>th</sup> Main Directorate and MinAtom shared responsibility for both transportation and warhead dismantlement. Since MinAtom was a gigantic ministry with a high degree of decentralization and compartmentalization, Mikhailov usually led the bilateral and multilateral negotiations, attending and addressing officials at international meetings, and participating personally in senior-level political meetings within the Yeltsin government. Following the initial series of Nunn-Lugar agreements, Mikhailov's deputy, Nikolai Yergov, negotiated with Birely or Ambassador James Goodby on specific terms of the Nunn-Lugar implementing agreements.

Russia's nuclear weapons transportation system had been designed to secure and transport out-of-service nuclear weapons from military storage depots to the dismantlement enterprises. Beginning in the late 1980s, the rate of dismantlement was approximately 1,500 to 2,000 warheads per year.<sup>49</sup> Under normal circumstances, specialists at the enterprise where the warhead had been manufactured performed the dismantlement work. Once dismantled, nuclear materials were placed in sealed hermetic containers and shipped in special railcars on heavily-guarded trains to one of MinAtom's nuclear complexes for permanent storage. Highly enriched uranium (HEU) and plutonium went to the closed nuclear cities of Chelyabinsk-65 and Tomsk-7; tritium was shipped to Chelyabinsk-65 for storage and recycling; and thermonuclear fuel was sent to Novosibirsk.<sup>50</sup> Following processing, the assemblies and components containing HEU and plutonium were transported via rail to MinAtom's Central Arsenal at Mayak. According to Russian analyst Dmitry Litovkin, the "most vulnerable" stage during transit was rail transport. If there were to be a railcar crash, followed by fire and explosions, it could cause a chain reaction and a nuclear explosion. The risk of such an accident occurring would increase if high-explosive materials were involved, or if there was a lack of railcars with fire-prevention or fire-suppression equipment, or if the safety systems were inadequate.<sup>51</sup>

In the summer of 1992, U.S. Defense Department program managers and Department of Energy (DOE) specialists worked with nuclear weapons officers at the 12<sup>th</sup> Main Directorate and MinAtom to define technical requirements for a Nunn-Lugar assistance program to enhance security in transporting nuclear weapons and materials across Russia. Following a

series of meetings and exchange of proposals, the bilateral group agreed on several items of equipment that would go into special conversion kits for installation in cargo and guard railcars. The kits, to be purchased with Nunn-Lugar funds, would provide improved fire detection, thermal protection and monitoring of external intrusions.

In the beginning, these bilateral meetings were extremely rigid. Bill Moon, one of the Defense Nuclear Agency's first Nunn-Lugar project managers, recalled that "it was very painful" to develop an agenda for meetings using the administration's interagency system. Within the Defense Department, program specialists would initiate a tentative agenda, list proposed projects, coordinate them with the department's Nunn-Lugar policy officials and then get approval from officials at State, Energy and other organizations in National Security Council's (NSC) interagency system. When the NSC approved the agenda, an American negotiating team would fly to Moscow for meetings with the Russian government's team. Moon remembers that, "we would rent extra hotel rooms, since there was so much computer equipment...to record every little thing that we did. We had to make sure [that] the interagency back home was completely in sync with everything that we were doing."<sup>52</sup> Negotiations were conducted in a rigid diplomatic style reminiscent of recent arms control treaties and agreements. There was little of the trust that developed later, and negotiations went slowly. "Two days of the week," Moon said, "were devoted to negotiations on the record of our discussions."<sup>53</sup> One consequence of this



Jaws of Life equipment

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## With Courage and Persistence

extraordinarily cumbersome process, exacerbated by the fact that both nations had such large, entrenched bureaucracies, was that the two sides agreed to only a few projects at a time. A former White House official, Frank von Hippel, observed:

“To assure that the government is speaking with one voice, most U.S. government communications to other governments are channeled through a few State Department or Embassy officials working from “talking points” prepared by interagency committees. This limits the rate of communication to one significant round every few months. In between both bureaucracies ponder the response of the other side and prepare the next round of proposals and associated talking points. The process is so ponderous that most people lose track of the forest for the trees.”<sup>54</sup>

Perhaps because of the leadership of General Maslin and the urgency of the situation within Russia, the drafting of terms for the implementing agreement on nuclear weapons transportation system proceeded quickly. After just two months, John H. Birely and Victor Mikhailov signed a Nunn-Lugar implementing agreement on August 28, 1992.<sup>55</sup> The United States pledged up to \$20 million for acquiring and delivering conversion kits to modify up to 100 cargo railcars and 15 guard railcars by April 1994. Work began quickly as the Russian government sent a Russian cargo railcar to the United States within 90 days. American technicians at Sandia National Laboratory in Albuquerque, New Mexico developed materials for the prototype railcar and conversion kits.

In the fall 1993, Lt. Colonel Bill Coleman, the Defense Department’s Nunn-Lugar program manager sent the prototype railcar and four conversion kits, containing fire detectors, thermal insulation, and sensors, from New Mexico



Defense Threat Reduction Agency

Russian military railcar with new CTR equipment



**Sandia  
National  
Laboratories**

Sandia National Laboratories

to Russia.<sup>56</sup> Following technical demonstrations to General Maslin and the senior staff of the 12<sup>th</sup> Main Directorate, and a Russian security inspection, training began on how to install conversion kits into the railcars. The contract for installing sensors and devices in the 100 railcars went to the Tver Railcar Building Plant, Russia's largest manufacturing enterprise (9,600 workers) of special-purpose rail cars. From January 1994 to April 1996, Nunn-Lugar funds financed installation of these conversion kits in 100 cargo railcars and 15 guard's railcars at the Tver plant. General Maslin monitored the program carefully and stated publicly at an international forum in 1995 that: "This equipment has greatly enhanced physical security and fire protection for weapons in transit to dismantlement facilities."<sup>57</sup>

Another Nunn-Lugar program, procurement of fissile material containers for transportation and storage, was clearly related to moving thousands of nuclear warheads but also was intended to help MinAtom store the nation's excess nuclear materials safely and securely. In the 1990s, the vast strategic nuclear arsenals of the Russian Federation and the United States were slated for reduction under strategic arms control treaties. During the Cold War nuclear arms race, the Soviet Union's nuclear manufacturing centers had produced approximately 125 tons of plutonium and 1,050 tons of HEU. By comparison, United States' national nuclear plants had produced about 111 tons of plutonium and approximately 994 tons of HEU.<sup>58</sup> Once the strategic arms reduction treaties entered into force, both nations' defense and nuclear ministries were responsible for decommissioning strategic weapons systems, dismantling nuclear warheads, and transporting these warheads and nuclear materials to permanent nuclear storage sites. In the United States, the Department of Energy had mission responsibility for permanent storage, while in Russia it was the Ministry of Atomic Energy. While the U.S. government had the financial and physical resources needed to construct new permanent nuclear storage sites, the Russian government did not.

As early as February 1992 in the very first U.S. - Russian discussions, Minister Mikhailov and his advisors

recommended that Nunn-Lugar funds be used to design and build a new, modern fissile missile storage facility at MinAtom's Central Arsenal at Mayak.<sup>59</sup> Mikhailov argued that the lack of a secure facility to store materials extracted from dismantled nuclear weapons was a major bottleneck in the dismantlement process. Russia's existing facilities did not meet contemporary international standards for safety, security or the environment. He continued that MinAtom needed additional capacity to store permanently the nuclear materials flooding in from military storage depots in Central Europe, the newly independent states, and eventually the missile, bomber and submarine systems being reduced by the arms control treaties. Reginald Bartholomew, Deputy Secretary of State, agreed with Mikhailov's assessment and placed this Russian recommendation in the first set of Nunn-Lugar program initiatives.<sup>60</sup>

At this early point, the Russian government estimated that the new fissile materials storage facility would have the capacity to store up to 55 tons of excess plutonium in 25,000 containers. Negotiations in the spring of 1992 focused on developing a specific requirement for special, hardened fissile materials containers. The United States used similar containers extensively and offered Nunn-Lugar funds to purchase and deliver new fissile materials containers to Russia. By the time of the Bush-Yeltsin summit in Washington in June 1992, Mikhailov and the Russian negotiators had stated a requirement for up to 45,000 fissile materials containers.<sup>61</sup>

On June 17, 1992, Undersecretary Atwood, Department of Defense, and Minister Mikhailov, Ministry of Atomic Energy, signed the implementing agreement on fissile materials containers, designating up to \$50 million for the program.<sup>62</sup> The Department of Defense pledged to purchase and deliver a shipment of 10,000 containers by December 1995. On Mikhailov's insistence, an annex to the implementing agreement stated that Russian nuclear weapons designers had to be consulted on the container's technical design specifications. This annex required the Russian Ministry of Atomic Energy to provide within 30 days technical specifications on container vibration input environments, permissible vibration rates for the inner vessel, acceptable leak rate levels, and any design requirements not defined by the International Atomic Energy Agency.<sup>63</sup> In a compromise, U.S. Defense and Energy Department officials agreed with Mikhailov's demand that the containers would have a

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Russian design, but they insisted they would be produced following U.S. design and manufacturing standards.

As it turned out, arriving at a compromise defining the agreement was easy for the two governments. However, working together on specific projects was not. For instance, design specifications for the containers became a contentious sticking point. Mikhailov explained: "We developed documentation for these containers. After all, we were talking about incredibly complicated engineering designs and structures. But the Americans wanted us to use their drawings."<sup>64</sup> A bilateral committee of nuclear scientists and weapons designers from MinAtom and Sandia National Laboratories examined the technical merits for the design of the fissile material containers. The committee recommended accepting the Russian design, with some American modifications. With this decision, U.S. program managers approved Nunn-Lugar funds for fabricating a set of prototype containers, and in April 1993 10 of the new containers were delivered to MinAtom officials in Moscow.

As outlined in the implementing agreement, MinAtom technicians examined these containers to see if they conformed to the design specifications. Once the Russian ministry evaluation was in-hand, Colonel Dick Wright, the Defense Department's program manager proceeded with competitive bids and awarded the project in September 1993 to the Scientific Ecology Group of Carlsbad, New Mexico. The contract was for \$40 million to build and deliver up to 33,000 fissile missile containers, with the first increment of 10,000 due by December 1995.<sup>65</sup> At some point in the year-long design-to-prototype-to-production-model process, Mikhailov suggested that a Russian firm should manufacture the containers in Russia.<sup>66</sup> Citing the Nunn-Lugar act, with its "Buy American" provisions, U.S. officials rejected this suggestion.

When it came time to negotiate the next major Nunn-Lugar financed project, the design for a new fissile material storage facility, Minister Mikhailov demonstrated that he had learned his lesson on dealing with his counterparts. From the start, he asserted forcefully the superiority of MinAtom's architects and design engineers. "The Americans didn't have such a storage facility," he said, "such a modern storage facility."<sup>67</sup> In Russia, he assigned the initial work to the Institute of Energy Technologies (VNPIET), a national nuclear design firm located in St. Petersburg. Then, he traveled to the United States and signed the U.S.-Russian

facility design agreement on October 5, 1992, with \$15 million designated for the initial design project.<sup>68</sup> The facility design work would be led by the St. Petersburg institute's engineers and architects, with the U.S. effort managed by Colonel Wright, CTR program manager, who worked in collaboration with engineers in the international division of the U.S. Army's Corps of Engineers in Omaha, Nebraska. This arrangement worked well throughout the design process over the next 18 months as the project moved from concept to final design.<sup>69</sup>



Defense Threat Reduction Agency



Department of Defense

In the fall of 1992, the American engineers provided training to the Russian team in Omaha on the methods of using computer assisted design models and hardened structures designs and techniques. Then in 1993, U.S.-Russian design teams exchanged technical design requirements and held joint project management reviews. The storage facility's concept design was completed in March, followed by joint technical requirements and design review meetings in Omaha that June. When the two national teams completed the final design for the fissile materials storage facility, joint planning began in December for the next step: drawing up construction requirements for building the storage facility

and providing it with modern security and safety equipment. That project's bilateral implementing agreement, signed by Ambassador James Goodby and Deputy Minister Nikolai Yergov on September 2, 1993, stipulated that the United States would provide construction and storage facility equipment.<sup>70</sup> The U.S. designated up to \$75 million for the project. However, the Russian government had to approve the final site selection, the final facility design and a construction schedule. It was at this point that progress on the fissile material storage facility ground to a halt.

MinAtom's bureaucracy caused many of the delays. They insisted on changing the final design, altering planning assumptions and revising construction schedules. Originally, MinAtom officials had planned to build a single large facility to store 110,000 containers at the Tomsk-7 nuclear complex.<sup>71</sup> However in 1993, local opposition emerged and increased in the spring months when an explosion occurred at the Tomsk-7 complex's radiochemical plant. As a consequence, MinAtom leaders cancelled plans for placing the facility at Tomsk and concentrated on a new site at Mayak, located within the Chelyabinsk-65 nuclear complex. With the new location identified, MinAtom's facility design team in St. Petersburg moved ahead and completed the final designs for the Mayak facility in the spring 1994. At the same time, the Defense Nuclear Agency's CTR project managers initiated procurement actions for the construction equipment.<sup>72</sup>

The Russian government moved ahead with site preparations and in July 1994 construction of the Mayak Fissile Material Storage Facility with a 25,000 container capacity began. At that time, the Russian government, specifically MinAtom, planned to finance the new storage facility's construction costs. Six months later, however, Russia's economy, along with state revenues had declined so severely that the government decided not to fund the project. At that time, Mikhailov appealed directly to Secretary of Defense William Perry. Within a few weeks, the United States agreed to dedicate some Nunn-Lugar CTR funds to construction of the Mayak facility. Work proceeded slowly, yet by mid-1995 Russian contractors were pouring concrete for the walls and floors.<sup>73</sup>

During these formative years, MinAtom and the Defense Department developed other Nunn-Lugar programs – some that were not successful, and others that were multi-national and very successful. An example of a program

that never gained momentum was a nuclear Materials Protection, Control, and Accountability (MPC&A) system. The project began in September 1993 when Ambassador Goodby and Deputy Atomic Energy Minister Yergov signed an implementing agreement providing up to \$10 million for its development.<sup>74</sup> In the year leading up to the agreement, Russia and the United States exchanged experts and technicians who visited a Russian nuclear power plant and enrichment facility, and who later toured U.S. facilities to assess the need for such a system. Following the Goodby-Yergov agreement, bilateral discussions led to a joint decision on a project that would develop a model MPC&A system to be installed at MinAtom's low-enrichment fuel fabrication plant at Elektrostal.<sup>75</sup> Senior Russian MinAtom officials, including Mikhailov, denied that there was a problem with their facility-based material controls and accounting system. This position was held despite the fact they did not have a consolidated national accounting system, one that encompassed data

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## U.S. and Russia chemical weapons stockpiles



United States: 30,000 tons  
Russia: 40,000 tons

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on all nuclear facilities or during transportation of the nuclear materials.<sup>76</sup> At the same time, senior American officials were reluctant to share details of the U.S. nuclear materials accounting system, fearing it would compromise information and physical security. For more than two years, the project went nowhere. One Russian analyst characterized the bureaucratic posturing as "scandalous" since Russia faced a serious new threat from criminals stealing nuclear materials or diversion of fissile materials from nuclear complexes in the closed cities.<sup>77</sup> As a result, 15 months after the signed implementing agreement, less than six percent of the \$10 million designated funding for this project had been spent. Russian officials complained that very little of the proclaimed American assistance ever reached Russia.<sup>78</sup> By mid-1995, the MPC&A was perhaps the Defense Department's least successful Nunn-Lugar project.

## CTR assistance for eliminating Russian Chemical Weapons

Another difficult project involved destruction of chemical weapons. During the Cold War, the Soviet Union and the United States manufactured, tested and stored huge arsenals of chemical weapons. When the Cold War ended both nations participated in complex multinational negotiations that led to the United Nations' Chemical Weapons Convention (CWC).<sup>79</sup> By December 1993, representatives from 154 nations had signed the comprehensive CWC Treaty, including a provision that the treaty would enter into force with ratification by 65 nations.<sup>80</sup> At that point, the United States' stockpile had approximately 30,000 agent tons of mustard gas and various nerve agent compounds, and the Russian Federation had 40,000 agent tons of chemical weapons.

According to the CWC Treaty, all these chemical weapons had to be destroyed within 10 years. Almost simultaneously with the signing of this major nonproliferation treaty, the Russian Foreign Intelligence Service issued a report declaring that nine nations were developing the capacity to produce chemical weapons and chemical precursors.<sup>81</sup> In the United States, the Office of Technological Assessment declared that 11 nations had active programs for making chemical weapons.<sup>82</sup> Despite these new threat analyses, the new treaty signaled the emergence of a broad, international post-Cold War consensus against chemical weapons. Under the CWC Treaty's protocols, national stockpiles had to be destroyed within a decade and it prohibited all future activities relating to the "development, production, acquisition, stockpiling, retention, transfer and use of chemical weapons."<sup>83</sup>

Given the existence of such a broad international policy consensus, it should have been a straightforward effort to develop a bilateral cooperative agreement for the U.S. to provide funds for designing projects to reduce the Russian Federation's chemical weapons stockpile. In fact, it was extraordinarily difficult. Part of the difficulty lay with the United States. In the late 1980s, the Secretary of Defense had assigned the U.S. Army as the lead agency responsible for developing plans and programs to reduce and eliminate all U.S. chemical weapons. In the intervening years, U.S. Army planners drew up a comprehensive program based on modern incineration technologies, public safety concerns and adherence to the highest environmental standards for the nine projected U.S. chemical weapons sites. With

congressional approval and funding, the Army planned to build and operate new incineration facilities at chemical weapons storage sites and eliminate all the weapons within 10 years. Defense officials estimated elimination costs at \$8.2 billion in 1992.<sup>84</sup>

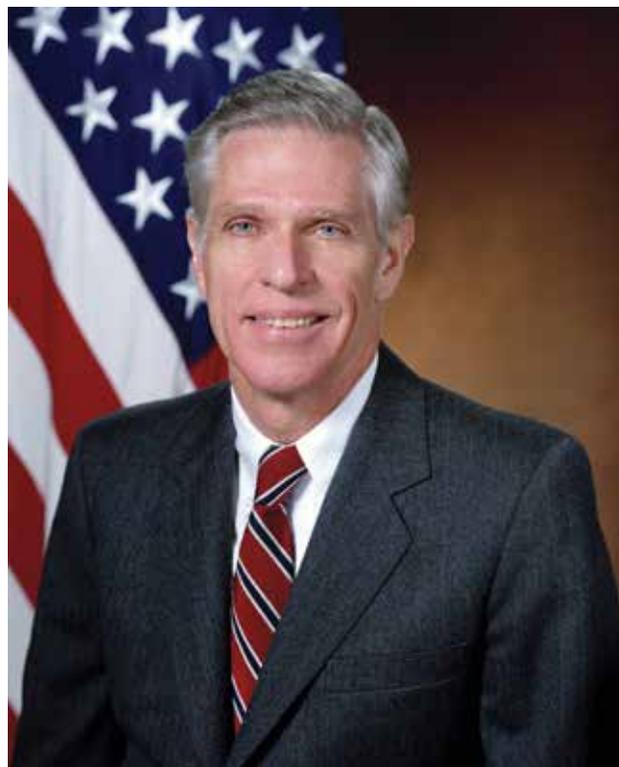
In the summer of 1992 when they met with Russian officials in Moscow to draft the initial Nunn-Lugar implementing agreement, American officials drew upon their plans for eliminating U.S. chemical weapons stockpiles and insisted that the Russian government must develop a comprehensive plan for destroying all of its chemical weapons at existing storage sites using similar incinerator technologies. Russian officials rejected the U.S. assumption that their chemical weapons experts and military commanders could not develop its reduction plan independently; one based on their more extensive knowledge of Soviet/Russian chemical weapons systems. They also rejected the concept of using U.S. incineration methods.<sup>85</sup> Although senior Russian officials had signed a CTR implementing agreement "Concerning the Safe, Secure, and Ecologically Sound Destruction of Chemical Weapons" in Moscow in July 1992, there was more confusion than consensus on moving to the next stage: defining specific cooperative programs and projects. U.S. Defense Department officials declared that \$25 million would be the initial limit for Nunn-Lugar chemical weapons assistance. In reality, however, little money was obligated or disbursed.<sup>86</sup>

The reason lay not in the Nunn-Lugar process but with the Russian government in Moscow. Neither the Soviet government nor the new Russian parliament had developed a comprehensive plan, one with fixed ministerial and organizational responsibilities, a national legal liability statute, annual funding, or any requirements for the consent and approval of the governments in the regions where the dangerous chemical weapons would be destroyed. Instead there was confusion and bureaucratic infighting. In 1992, a Presidential Committee on Chemical Disarmament, led by Academician Anatoly Kuntsevich asserted it would lead all negotiations and manage dismantlement programs. Within the Ministry of Defense, General Stanislav V. Petrov led the Russian Army's Radiation, Chemical-Biological Defense Troops, which controlled the chemical weapons production and storage depots. General Petrov asserted the primacy of the Ministry of Defense in planning, scheduling, technology and funding. Bilateral negotiations on U.S. CTR assistance programs for chemical weapons ground to

a halt during 1992 and 1993. Within the Russian Duma, parliamentarians questioned the government's commitment to implementing the CWC Treaty. Internal debates within the Russian government failed to resolve the complex issues of missions, funding, destruction technologies, health and safety standards and the environment. The legal basis for the nation's chemical demilitarization and elimination program languished in the Russian Duma for years.<sup>87</sup>

In an attempt to stimulate the Russian government and parliament into action, Harold P. Smith, Jr., U.S. Assistant to the Secretary of Defense, set up a Chemical Weapons Destruction Support Office in Moscow in June 1993.<sup>88</sup> This new office, staffed by people from the Army Corps of Engineers, On-Site Inspection Agency and defense contractors, was intended to signal that the U.S. Defense Department was prepared to work with the Russian government on chemical weapons elimination projects. Still, there was little effort within the Russian government to resolve the thorniest issues of roles, missions, funding and schedules. When President Yeltsin traveled to Washington in January 1994 for a summit meeting with President Clinton, they reaffirmed their commitment to promote ratification of the CWC Treaty and complete the protocols needed to implement a 1990 bilateral agreement on chemical weapons.<sup>89</sup> That agreement grew out of a bilateral 1989 Memorandum of Understanding on Chemical Weapons, which stated that the United States and the USSR/Russian Federation would exchange data on the respective stockpiles and then conduct a series of challenge inspections at each nation's chemical weapons production and storage sites.<sup>90</sup> Since the protocols were incomplete; the data exchanges and challenge inspections had not been done.

Following the Yeltsin-Clinton summit, U.S. and Russian chemical warfare experts agreed on the 1990 Memorandum of Understanding protocols and both nations exchanged required data on their respective chemical weapons stockpiles. Soon afterward each side conducted five challenge inspections. As these inspections were underway, Harold Smith, Gloria Duffy and senior Defense officials flew to Moscow in March 1994 and signed an amendment to the basic U.S.-Russian CTR agreement pledging that the United States would designate up to \$30 million in additional CTR funds to assist in design of a new Russian chemical weapons destruction analytical laboratory. The new lab would be located in Moscow's Vernadskiy Institute



National Archives - Still Picture Branch

Harold P. Smith, Jr.

for Geochemistry and Analytical Chemistry.<sup>91</sup> Two months later, Smith announced the administration would ask Congress to appropriate \$500 million to design and build a new chemical weapons destruction facility in Russia.<sup>92</sup> Despite these American pledges and announcements, there was scant progress with Russian officials on any specific chemical weapons programs or projects in 1994-1995. By May 1995, only \$7.5 million had been disbursed on this major CTR program, a sum that disappointed the American program managers, as well as Assistant Secretary Smith, Secretary Perry, Senators Nunn and Lugar and Congress. In fact, some in Congress questioned the wisdom of appropriating any further CTR funds for the chemical weapons program with Russia.<sup>93</sup>

### **Engaging Russian nuclear scientists and engineers: The International Science and Technology Center**

The Nunn-Lugar project for funding an International Science and Technology Center (ISTC) in Moscow also had to overcome its share of obstacles. It began as a concept even

before emergence of the Russian Federation. In May 1999 Guri I. Marchuk, president of the Russian Academy of Sciences, stated that more than “500 scientists from academy institutes have gone abroad, either permanently, or on long-term contracts.”<sup>94</sup> In fall 1991, Foreign Minister Kozyrev traveled to Washington and proposed that an international fund be established to keep disaffected Soviet scientists from leaving their institutes and research centers.<sup>95</sup> In January 1992, just weeks after the Soviet Union had collapsed, Mikhailov, Minister of Atomic Energy, declared that of the more than 100,000 people employed in the former USSR’s nuclear weapons development complexes, 10,000 - 15,000 were in possession of “really secret” information, and perhaps 2–3,000 had knowledge of advanced technologies of “paramount importance.”<sup>96</sup> Mikhailov said he was reasonably certain that if these scientists could find civilian employment they would remain in the country, citing a recent law that prohibited the scientists from leaving Russia. Robert Gates, CIA director, testifying to Congress in January 1992, was less sanguine. He explained that there was a group of 1-2,000 Soviet scientists with “weapons design expertise” whose skills had no civilian counterpart.<sup>97</sup> Meanwhile, the German government declared it was concerned about this issue. When Russian Foreign Minister Kozyrev met with German Foreign Minister Hans-Dietrich Genscher in mid-January, he outlined his proposal for an international fund for scientific research and for establishing transparency in emigration.



Russian Foreign Minister Andrey Kozyrev

Consequently when Yeltsin and Bush and their senior advisors met at Camp David in early February 1992, the issue was on the agenda. Bush proposed that they establish a joint U.S.-Russian research center in Moscow that would involve scientists from both nations cooperatively working together. The Russians insisted that the German government be involved. On February 17, following a burst of diplomatic activity, Baker, Genscher, and Kozyrev announced establishment of the new International Science and Technology Center.<sup>98</sup> On the same day, 12 foreign ministers of the European Union nations endorsed, at the urging of Germany’s Genscher, the new Moscow science and technology center concept and pledged to contribute up to 20 million euros. The following month, Japan also indicated its willingness to participate. By May, the United States, European Union and Japan made a joint proposal to provide up to \$75 million in funding for the new center. The Russian government stated that it would provide a facility for the center, as well as pay for maintenance, utilities, security and related support. The concept was to have an international board that would vet and approve scientific research proposals, including requests for new laboratory equipment from the Russian scientific and technical community. Collaborative international scientific projects would be encouraged, even facilitated by the center’s administrative and professional staff.<sup>99</sup>

In the United States, the Bush Administration acted quickly to move the new Russian science and technology center from concept to legislation to program and project. Senator Nunn included the center in the authorizing language for the FY1993 Department of Defense Authorization Act. In October 1992, Public Law 102-484 authorized the Defense Department to establish science and technological centers in the newly independent states, with \$25 million set aside for the project. The multinational legal agreement establishing the Russian science and technology center was signed on November 27, 1992 in Moscow by representatives of the United States, Russian Federation, Japan, European Atomic Energy Community and the European Economic Community.<sup>100</sup> From the beginning it was an international center. According to the charter, the International Science and Technology Center’s principle objective would be to provide “weapons scientists and engineers, particularly those who possess knowledge and skills related to weapons of mass destruction or missile delivery systems...opportunities to redirect their talents to peaceful activities.”<sup>101</sup> In the Defense Department, Nunn-Lugar program managers prepared to



Defense Threat Reduction Agency

Colonel Bob Dickey

meet with their counterparts in Russia's MinAtom, but the meetings were delayed repeatedly. The Yeltsin government, acceding to pressures from the Duma, submitted the new center's legal agreement and charter to the Russian parliament for ratification where it languished for several years, holding up any real movement on the new science center.<sup>102</sup>



International Science and Technology Center

International Science and Technology Center

Colonel Bob Dickey, who managed this project within the CTR program, released very few funds to the new center in 1993 due to ratification delays in the Russian Duma.<sup>103</sup> The following year, however, Yeltsin's government worked out a provisional protocol that circumvented the ratification process, enabling the center's international governing board to hold its first meeting in March 1994. European, Japanese, American and Russian representatives serving on the new center's governing board met in Moscow, awarding \$11.6 million to 23 projects involving more than 600 scientists and engineers and their technical staffs.<sup>104</sup> Prior to the meeting, Colonel Dickey had notified Congress, as required, and then released the funds to Dr. Victor Alessi, director, Office of Arms Control and Nonproliferation in the Department of Energy. He served as the American representative to the center's governing board. The board's first meeting was a success, in large measure because a preparatory committee had used the year productively during the time the Duma had held up the opening of the institute. Committee members and the center's director had traveled out to most of the closed sites, nuclear complexes, and weapons design institutes and had explained the rules to Russian scientists and engineers for developing and submitting proposals.

Following its first meeting in March 1994, the center's governing board met four more times during the year, awarding project grants each time. By the end of the year, Finland, Sweden, Belarus, Armenia and Georgia had signed the basic agreement and were members of the center. During Fiscal Year 1994, Colonel Dickey released \$23.4 million as the U.S. contribution to the ISTC.<sup>105</sup> Located at MinAtom's Institute of Pulse Technology in Moscow, the new center was led by Oles Lomacky, executive director, who managed a staff of 21 people.<sup>106</sup> In December 1994, the U.S. National Security Council approved a reorganization of the entire U.S. CTR program. It directed the Secretary of Defense to transfer responsibility for the ISTC program to the State Department, with the provision of \$10 million in CTR funds to cover transition costs.<sup>107</sup> By that time, the new international center in Moscow was well underway, with approximately 5,000 Russian scientists and engineers working on projects funded by the center.<sup>108</sup> The Russian government, the Ministry of Atomic Energy and the scientists and engineers judged the new international effort a success.<sup>109</sup>

## U.S. - Russian Strategic Offensive Arms Elimination Program begins

While the Defense Department was pulling away from managing program funding for the International Science and Technological Center, it was pushing ahead with another major Nunn-Lugar CTR program with Russia: Strategic Offensive Arms Elimination (SOAE). Initially, U.S. diplomats and defense policy officials listened as Russian Federation officials explained their first priorities for cooperative projects: transportation security, emergency response systems, fissile material containers, a new fissile materials storage facility, and a scientific and technological center for Russian nuclear weapons scientists. As these projects were being discussed and defined in the summer and fall of 1992, U.S. presidential elections brought the Clinton Administration to power. Following President Clinton's inauguration in January 1993, U.S. Senate hearings and approval of the president's cabinet officials, the administration turned to policy review of U.S. relations and programs with Russia, Ukraine and the other new nations.

Secretary of Defense Les Aspin, his deputy, William J. Perry, and key senior officials, Ashton Carter, Gloria Duffy, Laura Holgate and Harold Smith, argued that Nunn-Lugar funds should be used to assist the Russian government in accelerating its required strategic weapons eliminations under START I.<sup>110</sup> Carter, a professor at the Kennedy School of Government at Harvard University, had introduced the original concept of the United States offering bilateral security assistance to Senators Nunn and Lugar in 1991. Now 18 months later, Carter was Assistant Secretary of Defense for International Security Policy and he sought to expand the Nunn-Lugar program into specific projects on a far broader scale. These arguments were persuasive within the Clinton Administration. In 1993 and 1994, a small cadre of Defense Department military officers, Colonel Robert Rozak, Colonel Jim Reid, Lt. Colonel Bill Coleman, and Commander Michael Demmio, accompanied Deputy Secretary Perry, Carter, and Smith on numerous visits to the newly independent states. During these visits the group discussed and defined Nunn-Lugar projects with their ministerial counterparts. They engaged with military and defense leaders and participated in numerous technical requirements meetings and conferences.<sup>111</sup> The Clinton Administration and senior defense leaders sought to

engage the Yeltsin government on a broad variety of political, economic and military assistance programs.<sup>112</sup> In the area of assistance for nonproliferation of weapons of mass destruction, there was continuity with policies of the previous administration, but there was change too, as the entire American CTR assistance program was expanding significantly.<sup>113</sup> There was a new sense of engagement and energy: expansion of the strategic offensive arms program with the Russian Federation was a prime example.

Eight months after the Russian Parliament ratified the START Treaty, American Secretary of Defense Aspin met Defense Minister Pavel Grachev in Moscow in June 1993. They discussed expanding Nunn-Lugar program to assist the Russian government in meeting its international obligations for eliminating weapons systems under the START Treaty.<sup>114</sup> As a direct result, two months later Ambassador James Goodby, U.S. Ambassador for the Safe, Secure, and Dismantlement Talks, arrived in Moscow with a large American team to begin negotiations on the first U.S. - Russian strategic offensive arms elimination CTR implementing agreement. Goodby had worked in arms control and nonproliferation for more than 30 years. An experienced diplomat, he was well known and respected by senior officials in the Russian government. Gloria Duffy served as the ambassador's deputy and represented DOD as a deputy assistant secretary of defense and special coordinator for CTR. Both Goodby and Duffy believed one of the principal objectives of the Nunn-Lugar legislation was to encourage, through financial aid and technical assistance, the new treaty states to fulfill their treaty obligations. As Goodby saw it, it was "not to just fulfill it, [but] to expedite it, and to accelerate it."<sup>115</sup>

In Moscow, Goodby, Duffy, and the American delegation met for 10 days with a large contingent from the Russian Ministry of Foreign Affairs, Ministry of Defense, General Staff, and the Committee on Defense Industry (Roskomoboronprom). The latter committee was a critical organization since it coordinated the resources, budgets and work of nearly 3,000 defense enterprises, institutes, and design and production bureaus.<sup>116</sup> The Yeltsin government announced in the midst of the negotiating sessions, that it had assigned responsibility for eliminating Russia's strategic and conventional weapons systems to the State Committee for Defense Industry.<sup>117</sup> In that committee, Nikolai I. Shumkov directed the main administration for disposition of weapons and materiel. A capable and experienced man,

he became Russia's key negotiator on technical questions relating to weapons dismantlement. Shumkov combined experience working in the Soviet Union's Military-Industrial Commission with a stint as a senior policy advisor working with Soviet negotiating delegations on the strategic and conventional arms control treaties. He had also worked as a program director for modernizing nuclear missiles in the Soviet strategic nuclear submarine forces. After the final meeting on August 23, 1993, Victor Glukhikh, chairman of the Committee on Defense Industry and Gloria Duffy, Defense Department Special Coordinator for the CTR Program, signed the implementing agreement "Concerning Cooperation in the Elimination of Strategic Offensive Arms (SOAE)". The United States pledged up to \$130 million and promised to move quickly to acquire and deliver new equipment to Russia.<sup>118</sup>

This U.S.-Russian Federation SOAE implementing agreement was significant for two reasons. First, it sent a signal to the Ukrainian government parliament and the 43<sup>rd</sup> Rocket Army during a time of intense debate on the future of Ukraine's nuclear forces and strategic weapons. The fact that the United States was willing to commit substantial resources – more than \$100 million – to the Russian government for eliminating its strategic offensive arms, demonstrated to Ukraine's government and its military, diplomatic and parliamentary leaders that if their nation would ratify START and its protocols, similar American funds and resources would follow. Second, the new implementing agreement forced DOD's CTR policy and program managers to concentrate on developing new projects that would meet a specific, measurable objective – assistance to Russia for elimination of its treaty-based strategic offensive arms under the START Treaty.<sup>119</sup>

This linkage of direct assistance to Russia's START Treaty compliance proved to be of political importance. The United States, everyone assumed, had sufficient resources and the political will to rigorously fulfill its treaty obligations to the letter of the law. The Russian Federation, it was assumed at the time, would comply with arms control treaties and use its own resources and limited U.S. CTR assistance to meet its treaty obligations. Accordingly, the United States and Russia would be reducing their strategic deterrence forces step by step under an international treaty that required extensive and continuous data exchanges, on-site inspections, satellite verification and annual

reporting of all eliminations. Successive U.S. and Soviet/Russian governments had committed themselves to an array of bilateral and multilateral arms control treaties – INF, CFE, CWC, START I and START II. Visible, verifiable and reciprocal, these negotiated treaties and protocols established an international structure for cooperative reductions beyond the treaties.

## **Russia's initial state contract for Strategic Offensive Arms Eliminations**

Before the United States offered its assistance, the Russian government had planned and initiated a program to decommission, dismantle and eliminate strategic missiles and missile silos, submarine-launched ballistic missiles, and air launched cruise missiles and bombers as required by the START Treaty. When the treaty was signed in July 1991, the Soviet Union had 26 strategic missile divisions located in six missile armies. After the dissolution, 20 missile divisions were based in Russia.<sup>120</sup> The director of the main administration for disposition of weapons and materiel, Nikolai Shumkov, worked with senior generals at the general staff and the military forces in planning the sequential decommissioning and elimination of strategic nuclear forces. "Back in Soviet times," Shumkov explained, "we had a planned system [within MOD] for both weapons procurement and for weapons elimination and disposition. The number of specific systems to be eliminated at each specific base was determined either at the state defense contract level or at government level. This is the way we have always done it, and we continue to do it."<sup>121</sup> It was the reverse, he continued, in the weapons procurement system where the military forces set requirements for new weapons and the defense industrial sector defined technical, scientific and production aspects of a weapon and its systems. The old defense bureaucratic system persisted in the new Russian Federation. Now in the early 1990s, the military planning staffs and many of the same defense enterprises and program managers turned to planning the elimination of Russia's START Treaty excess missiles, bombers and submarines.

The Strategic Rocket Forces, working with Shumkov's administrative office, established missile dismantlement sites at Pibanshur, Sechuga, Uzbur and Yedrovo. The Russian Naval Forces identified three naval shipyards – Zvezdochka in Severodvinsk, Nerpa in Murmansk and Zvezda in Bolshoi

Kamen for dismantlement of missiles as well as elimination of nuclear submarines. To dismantle Russia's heavy bombers, the Russian Air Force established a single elimination site at Engels Air Base. Once the strategic weapons had been decommissioned and the nuclear warheads separated and secured, then the launchers (missiles) would be transported by military vehicles and special railcars from their operational sites to dismantlement bases. There, Shumkov's administrative office in Moscow had contracted with large defense enterprises to initiate the dismantlement, salvage and elimination work. The same military-industrial defense enterprises that during the Soviet Union had produced more than 27,000 nuclear weapons, including 11,000 strategic nuclear warheads and 1,400 ICBM launchers, were directed to begin dismantling and eliminating the excess weapons. In 1993, work on decommissioning and dismantling weapons began in the missile fields, naval shipyards, and the bomber base. Coordination between the SRF, the main administration in Moscow and the enterprises went as scheduled. According to one report, by July 1994 the Russian government had removed more than 400 missile launchers from fixed silos and nuclear submarines.<sup>122</sup>

The dismantlement work was quite technical and, in some cases, dangerous. In the Strategic Rocket Forces, the first step was removal of a missile regiment from alert status. Next, nuclear warhead specialists from the SRF's 6<sup>th</sup> Directorate removed the warhead from the missile launcher, then secured and transported it to the division's nuclear weapons depot. In the case of the liquid fuel rockets, fuel was pumped from the missile in the silo into special tanker vehicles. Then the missile, resting in its launch canister, was lifted from the silo and placed into a special military transport vehicle and taken to a temporary storage facility at the missile division. After the regiment's missiles were removed from the sites, the silos were prepared for demolition. Each missile silo, indeed the missiles on nuclear submarines as well, were destroyed in accordance with START I Treaty elimination protocols.<sup>123</sup> All of the secret dismantlement work was performed at secure military sites. Secrecy was necessary since Russia's national military strategy had not changed; it still retained its emphasis on strategic nuclear forces "on alert." Since the missiles, submarines and bombers being eliminated were the same models as those in the field, it was imperative to Russian military commanders that all aspects of the strategic systems would remain secret. It was out of the question

that any Americans would work at these Russian military dismantlement sites.<sup>124</sup>

From the beginning several issues complicated the dismantlement process. There were so many strategic launchers to be eliminated under the START treaties and agreements that the new Russian Federation did not have sufficient infrastructure for eliminating all the strategic weapon systems. During the initial SOAE negotiations in August 1993, Shumkov explained that Russia had to demobilize and eliminate hundreds of liquid fuel missiles, SS-18s and SS-19s. With the breakup of the Soviet Union, he explained that "half of the fleet of special rail tank cars for the shipment of fuel and rocket-fuel oxidizer ended up outside of Russia...many in Latvia and Ukraine."<sup>125</sup> Russian officials estimated they would need a storage capacity for more than 110,000 tons of liquid rocket fuel. Then they declared Russia would have to finance and construct new plants to convert the toxic heptyl rocket fuel and its oxidizer into a commercial compound. The SRF's most modern ICBM was its solid rocket-fueled SS-24 missiles. Several hundred of these missiles would be eliminated under the treaties. There were no plants in Russia to eliminate solid rocket-fueled missiles; new ones would have to be funded and constructed. A third issue concerned the Russian Navy. None of the navy's shipyards had modern equipment, facilities for defueling the nuclear submarines or facilities for storing spent nuclear fuel. While the Russian government was capable of removing the land and sea-based strategic missiles in accordance with the START Treaty, it was incapable of destroying the launchers and weapons systems without constructing new elimination facilities. While not all these issues were discussed at the first round of negotiations for the U.S.-Russian SOAE projects, they would sometimes surface in months, or even years, down the road.<sup>126</sup>

### First U.S.-Russian SOAE projects

What exactly was being requested, discussed and accepted in those initial negotiations in August 1993? Director Shumkov and Russian officials requested, and Ambassador Goodby and the American delegations agreed, that the American CTR program would purchase and deliver the following equipment to Russia:<sup>127</sup>

- Tanker railcars for transporting and storing the highly toxic heptyl and amyl fuels removed from decommissioned ICBMs and SLBMs

- Transportable incinerators to burn excess the liquid rocket fuels
- Equipment to expedite nuclear submarine SLBM launcher eliminations
- Heavy equipment to assist in ICBM fixed-silo launcher eliminations
- Long-range heavy bomber elimination equipment
- An emergency response train for transporting SLBM and ICBM fuels and missiles to elimination sites

During negotiations, both sides insisted on including specific terms and conditions. The United States insisted the aid was being given cooperatively and expected the Russian government's State Committee for Defense Industry to use it for "expeditious, safe and environmentally sound" elimination of strategic offensive weapons. The Russian committee on defense industry insisted on being equal partners in identifying specific equipment, defining performance specifications, and establishing training and other requirements.<sup>128</sup>

Negotiators from both parties included other conditions. Since all the equipment would be American-manufactured, Russian officials requested Russian language training on the new machines with translated equipment manuals. They further insisted that the U.S. firms maintain equipment for up to a year following delivery. In turn, the U.S. delegation asked that the Russian government identify specific points of entry for delivery of equipment and notification of arrival within ten days. In accordance with the terms of the government-to-government CTR framework agreement, the U.S. stated it would pay no customs or taxes on any of the U.S. provided equipment, maintenance or training. The U.S. asserted its right to send a small team of auditors to Russia to examine the use of equipment, services and training provided. Russia limited these audits and examinations to two sites and no more than three times a year. The U.S. agreed to provide the equipment within one year and declared that the Department of Defense would consider requests from the State Committee for Defense Industry for additional material, services and training. Since this SOAE implementing agreement would be in effect for seven years, both sides anticipated expanding assistance in the following years.<sup>129</sup>

The final signed agreement accommodated each nation's requirements, requests and conditions. What was not in

the agreement was a set of assumptions on how the work would actually be done. Shumkov and Russian ministerial officials assumed the Committee for Defense Industry would plan and control the actual work eliminating the missiles, bombers, submarines and their launchers in Russia. They would be the program managers in charge of setting the schedule, performance and completion requirements. As Russia's senior program manager for Strategic Offensive Arms Eliminations, Shumkov would work with the military services in establishing disposition



Defense Threat Reduction Agency

Eliminating Tu-160 bomber, Ukraine

sites, fuel storage areas, and in coordination with MOD and MinAtom officials, develop the technical processes for decommissioning, dismantling, defueling and destroying the strategic weapons and materials.<sup>130</sup> U.S. Defense Department CTR officials assumed their role was to assist Shumkov and his staff in identifying the equipment and then U.S. officials would purchase it competitively, ship and deliver it to Russia, and provide ancillary training and maintenance. United States officials would not manage any aspect of the elimination programs or projects within Russia. Although many assumptions changed later, they were accepted by each government in 1993 and 1994.

In fact, the Department of Defense had great difficulty fulfilling its commitments. The defense agency responsible for delivering on the promised commitments in the SOAE agreement was the Defense Nuclear Agency (DNA). That agency had only a handful of people trying to work within congressional and departmental legal policy guidelines and federal acquisition regulations. To get a sense of the gap between the expectations of the department's CTR policy officials and the performance of its program

**With Courage and Persistence**

managers, Table 4-1 contains equipment the United States government promised to deliver to Russia in one year.

While some of this equipment was acquired and dispatched within a year, the vast bulk took two, and in some cases as long as five years to reach Russian elimination

sites. Even for experienced Defense Department program managers and senior military officers, the program delivered material and equipment to Russia at an extraordinarily slow pace. Jim Reid, a senior Air Force Colonel, recalled his frustrations with the American acquisitions process. He

**Table 4-1. Initial U.S.-Russian Federation CTR Equipment List: SOAE Agreement, 23 August 1993<sup>131</sup>**

Russian request	U.S. commitment
Elimination of liquid rocket Propellants (heptyl & amy)	Transportable incinerators (750-ton capacity annually)
Railcars for transporting and storing liquid rocket propellants	100 new tanker railcars for amy 100 new tanker railcars for heptyl
SLBM Launcher elimination equipment	Hydraulic sheers (6) Hydraulic guillotine sheers (3) Plasma steel hull cutters (6) Oxy-acetylene torches (60) Marine cable shredders (3) Ventilation and filter units (60) Welder’s hoods & air supply sets (60)
ICBM & ICBM silo elimination equipment	Plasma cutter (4) Bulldozers (4) Mobile cranes-60 tons (4) Electric drills (4) Electric angle grinders (4) Grinding wheels (100) Electrical impact wrenches (4)
Heavy bomber elimination equipment	Truck mounted crane (2) Tractor and semi-trailer units (2) Fork lifts (4), dump trucks (2) Fire trucks (3) Hydraulic sheers (2) Plasma cutters (4) Guillotines (2) Mobile cranes, 85-tons (2) Universal hydraulic tools (4 sets) Electric drills (4) Electrical angle grinders (4) Grinding wheels (100)
Emergency response training equipment	Railroad-mounted crane (1) Set of tools (1) Hydraulic sheers (2 sets) Hydraulic grapples (3) Universal processor for reducing concrete & Steel structures (1) Hydro-abrasive cutter (1)

*Source: “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,” 23 August 1993.*



Defense Threat Reduction Agency

CTR equipment being used in heavy bomber elimination

explained that “Defense Nuclear Agency people would put together some catalogs, go over to Moscow and talk with the defense industry committee members about equipment for the shipyards, and find out what kind of equipment would be helpful for the shipyards to dismantle nuclear strategic submarines.” When the American project officers returned to Washington, Reid continued, they would work with the Defense Department’s CTR policy managers, estimate funding levels, go through the congressional notification process and then develop specifications for the competitive government acquisition process for each category of equipment. This complex acquisition process, however, that the armed forces used to order thousands of similar items daily, proved under the CTR program to be recondite and full of delays and difficulties.<sup>132</sup>

There were implementation problems in Russia as well. Government reorganizations, characteristic of newly

formed nations, converted the Committee on Defense Industry (Roskomoboronprom) in 1993 into the State Committee for Defense Industries (Gosomoboronprom). Then in 1994, it became the Russian Federation Ministry of Industry (Minoboronprom). In all three agencies the same administrator, Nikolai Shumkov, directed implementation of the missile elimination program. He led the department responsible for disposition of strategic offensive arms and in late 1993 became the chief coordinator for the program within the Russian government. He was responsible for tracking Russia’s START I Treaty elimination commitments. While the lines of authority for implementing Russia’s SOAE program were being clarified, the constant shift of ministries, enterprises and organizations within the government made coordination difficult. Often one ministry did not know what another ministry had done, or even if the government had approved projects. U.S. officials became frustrated at repeated delays in Moscow with every aspect of the program.<sup>133</sup>

A second, more serious issue arose within the Russian government. Starting in late 1992 and accelerating each subsequent year, the government cut funds for elimination of weapons and materials. The Russian parliament cut the budgets for the military services and the Ministry of Defense. Under the Yeltsin government, the Minister of Defense shifted his limited funds to weapons modernization and military manpower.<sup>134</sup> To take one of the many examples, at one point the Defense Ministry stopped appropriating money for repairs to its military depots and storage facilities. As a consequence, dangerous conditions developed at the missile depots storing thousands of metric tons of toxic liquid rocket fuels. There were no funds for maintenance on the specialized fuel transport vehicles. Like General Maslin, Director Shumkov recalled that it was a desperate time. “Finally there came a time when the Russian budget had absolutely no money for compliance with treaty obligations or for elimination of the weapon systems and the weapons continued to deteriorate to the point that they were unsafe for us, and, well, for the entire world.”<sup>135</sup>

## Criticism cascades down on American and Russian CTR programs

A gap had developed between American CTR policy officials’ promises and the reality of program managers’ deliveries to Russia and elsewhere. On one hand, DOD



Defense Threat Reduction Agency

CTR equipment being used in heavy bomber elimination

officials envisioned a large, sweeping, multi-faceted, multi-year defense assistance program that would assist the new governments rapidly and persistently. They reported to Congress that the CTR program had budgeted and obligated \$78.7 million in fiscal year 1993 and \$51.3 million in fiscal year 1994 for Russian SOAE assistance. Program managers, on the other hand, saw a foreign assistance program so encumbered with bureaucratic regulations, congressional conditions, and departmental legal assumptions that it probably would not succeed or persist. John Connell, who joined the CTR program in December 1993, was a keen observer of bureaucratic organizations and of federal managers trying to make programs work. He concluded that "initially all we [at DNA] were going to do...was buy some bulldozers and trucks and some cranes, and then maintain them for a year, or in some cases three years. And then we were done. We were going to walk away."<sup>136</sup>

Rose Gottemoeller, Director for Russia, Ukraine and Eurasia on the National Security Council in 1993-1994, saw the issue clearly. As the Clinton Administration developed

its agenda for the region, Nunn-Lugar assistance became the "most important" means for accomplishing the president's foreign policy priorities with the Russian Federation. However, in the Defense Department there were critics who wanted the program scaled back. For several years the Defense Nuclear Agency, Gottemoeller wrote, had been criticized for "slowing" program implementation by insisting that the "letter" of DOD procurement rules be fulfilled.<sup>137</sup> These procedural rules slowed every aspect of the program, and caused congressional critics to blame the administration, department and program office for "not delivering."<sup>138</sup> Ashton Carter, Assistant Secretary of Defense for International Security Policy, had policy responsibility for the Defense Department's Nunn-Lugar CTR effort from 1993 until 1996. He had a similar analysis: "The Pentagon acquisition system is justly fabled for its ponderous procedures, endless paperwork and slow workings. Now the acquisition system that seemed to purchase airplanes in California and computers in Massachusetts, only with difficulty, was being asked to conduct multimillion dollar projects in places like

Pervomaysk, Ukraine, Engels and Russia; places where U.S. industry had never done business.”<sup>139</sup> According to these senior officials, the department needed better management of the American process of defining, acquiring, coordinating, delivering and getting materials expeditiously to the actual facilities and elimination sites in Russia.

To a degree, Gottemoeller, Carter and other senior CTR policy officials were responding to a barrage of congressional criticism, specifically from analysts working at the General Accounting Office (GAO). Long associated with Congress,



U.S. Embassy, Tallinn, Estonia

Rose E. Gottemoeller

the GAO conducted independent evaluations and reports for Congressional committees. Their evaluations were not only influential but forced responses from the administration and its senior program officials. In the formative years of the program, the GAO issued ten reports on the administration’s performance of the CTR program. Most, if not all these reports to Congress were critical of the program’s policy coordination, management, organization, lack of audits and examinations, and effectiveness. The evaluations were quite specific, measuring CTR annual performance against the administration’s congressional notifications, obligation rates and disbursements.<sup>140</sup> While administration officials, especially Ashton Carter and Harold Smith, responded to the critiques in congressional testimony and with written responses, the cumulative weight of criticism forced changes. In Congress, Senators Sam Nunn, Richard Lugar and Pete Domenici turned back most of the severest criticisms, while asserting their interest, attention and patronage.

Not surprisingly, Russian analysts were also critical of the Yeltsin government’s lack of capacity to define, receive and

use CTR assistance. In 1995, Vladimir A. Orlov, director of a Moscow-based center for nuclear policy issues, surveyed key CTR decision-making officials in the Russian President’s Office, National Security Council, Ministry of Atomic Energy and Ministry of Defense.<sup>141</sup> He found intense bureaucratic competition existed within the Russian executive branch, as many ministries and offices vied for influence in CTR-program decisions. There was little or no coordination between ministries and offices. Competition existed, for instance, between MinAtom and the Federal Atomic Inspectorate over CTR programs that would assist nuclear facility safety and security. The Ministry of Defense and the President’s Committee on Chemical and Biological Weapons clashed repeatedly over which organization had responsibility for chemical weapons destruction. American CTR officials who traveled to Moscow in these years recalled having to go from ministry to ministry, providing the same information but failing to get any decisions, since governmental responsibility was so undefined.

Within the Russian government, there was no central decision-making organization. This issue became acute when national-level decisions were needed on customs duties, local taxes, or granting access to military sites, nuclear cities or facilities. The consensus for accepting Nunn-Lugar assistance, so prominent in testimony of government officials before the Duma committees in 1992 and 1993, had dissipated in the cascade of Russian domestic events, repeated program delays and inability of the government’s ministers or ministries to force solutions on entrenched bureaucracies that were demanding complex military and technical requirements.<sup>142</sup>

Oleg Bukharin, a Russian analyst and nuclear physicist, evaluated MinAtom’s work with the Defense Department’s CTR program from 1992 to 1995. He found that policy-making was tightly centered in Moscow, with little information provided to the main directorates working on cooperative projects in the nuclear cities and nuclear sites. MinAtom was highly centralized and compartmentalized; hence information on agreements, programs, or projects was not available to even the senior managers in the directorates. Secrecy and suspicion were central to MinAtom’s bureaucratic culture. As a result, U.S. CTR officials were often rebuffed as foreigners with no need to know any information on the nuclear sites.<sup>143</sup> In these years, MinAtom’s budgets were being cut; there was no money for restructuring its extensive bureaucracy. Outside funds, like CTR, were eagerly sought

after. However under U.S. law and the bilateral agreements, these funds could not be awarded directly to MinAtom. When the promised American equipment failed to arrive in Russia quickly, Minister Mikhailov, Minister of Atomic Energy, criticized the program: "I am personally satisfied by the implementation of only two agreements: on containers and on storage facility design. Frankly speaking, it is the U.S. side that is responsible for these delays. We've received much less equipment than was promised. Moreover, the assistance we get is mostly assistance to U.S. companies, not to us."<sup>144</sup>

A similar theme was expressed by Alexander A. Pikayev, counsel to the Defense Committee of the Russian Duma and a nonproliferation analyst. In the first four years of Nunn-Lugar/CTR, it had proposed spending \$612 million; it had obligated \$348 million in signed contracts; and had sent \$119 million in goods and services to Russia. Per annum, Russia received only \$34 million in CTR assistance; an amount that in 1995 constituted less than eight percent of the Russian Federation's weapons dismantlement budget.<sup>145</sup> Pikayev admitted that American assistance had improved in 1995, a development he attributed to managerial reforms in the U.S. Department of Defense. Yet, these changes came very late, as weakness in the Russian government under Yeltsin was producing greater instability in the nation's decision-making bureaucracy. Mikhailov at MinAtom was already disenchanted with the program; he was unlikely to champion the American assistance effort across the Russian government. At the Committee for Defense Industry, Nikolai Shumkov faced a series of ministerial-level reorganizations that stripped his organization of most of its revenues and resources. While some CTR equipment was flowing to Russian submarine dismantlement shipyards and bomber elimination centers, the pace was slow. The Russian chemical weapons destruction effort had severe organizational and technical difficulties in addition to rivalries over decision-making authority. MinAtom's fissile material control and accounting system had stalled on the rocks of secrecy, suspicion and bureaucratic intransigence. Like other Russian analysts, Pikayev was impressed by the American generosity and earnestness, but he concluded there were so many problems and difficulties with the U.S.-Russian Federation CTR program that it would dissipate if major changes were not undertaken.<sup>146</sup>

These critiques, while accurate, belied many senior Russian officials' support for Nunn-Lugar assistance,

specifically for continuing programs that furthered their nation's nonproliferation objectives and treaty compliance. Deputy Foreign Minister Georgy Mamedov declared that "agreements concluded with the United States on the Nunn-Lugar fund fully reflect Russia's national interests and meet Russia's concerns."<sup>147</sup> In general, the Russian prime minister and key ministers supported CTR, especially assistance programs in nonproliferation and defense conversion.<sup>148</sup> Yuri Baturin served as special assistant for national security in President Yeltsin's Office. "We generally support the idea of the Nunn-Lugar fund," Baturin explained, "and we expect it to increase...[t]he problem of reducing nuclear risks and proliferation is a very complicated and delicate one."<sup>149</sup> At the Russian National Security Council, Deputy Secretary Valerii Mamilov was familiar with all aspects of the program: "We welcome the U.S. Nunn-Lugar plan and believe in its fast implementation, with the understanding that the money should be invested in Russia, not outside of it."<sup>150</sup> In the State Duma, key committee chairmen and members continued to support the government's ministries working with the United States Department of Defense on the Nunn-Lugar fund. Perhaps the strongest endorsement came from the Ministry of Defense and the General Staff. Colonel General Maslin had worked closely with American CTR managers and declared: "The U.S. offered us aid, free of charge. We have no money in our budget to solve disarmament problems ourselves. Why should we say 'No'? The CTR helps MOD a lot."<sup>151</sup>

From these opinions and others, it appeared that many senior Russian officials had concluded that the government needed the array of nonproliferation and treaty compliance assistance programs U.S. CTR officials were offering. In this regard, both governments continued to share the same broad policy objectives in 1993 and 1994 that they had when Senators Nunn and Lugar had put forth the initial assistance, in spite of the enormous domestic and bureaucratic pressures and problems. "This program," Nunn concluded at a major international nonproliferation conference in 1995, "helped to focus the leadership of these newly emerging countries on the key problem of weapons of mass destruction at a time when they had many critical things to consider, when this was only one of many urgent priorities."<sup>152</sup>

Officials in the Russian and American governments agreed they shared many of the same policy objectives. They did not share, however, which specific changes were necessary to make CTR assistance work. The array of issues

was lengthy: How to make program decisions more quickly; how to fix decision-making responsibility at lower levels of the ministries, departments and military commands; how to manage and carry out the programs professionally; how to get requested equipment, training packages and instructors, and maintenance specialists to the right dismantlement site or storage facility on time and on schedule. If there was disarray within the Russian government and bureaucracies, there were structural and managerial problems within the Clinton Administration and the Defense Department. While no one in the United States thought the CTR effort with Russia would end, few held strong expectations that it would succeed with dozens of major, new programs and projects in the next decade. Two developments – one widely foreseen, the other totally unexpected – changed everything.

## Two developments

In the first instance, world and regional leaders, media and the public paid close attention to Ukraine in the fall and winter of 1993 and 1994. After nearly two years of independence, Ukraine's government was forced to decide on the fate of its inherited nuclear armies – the 43<sup>rd</sup> Rocket Army's 130 SS-19 and 46 SS-24 ICBMs, and the 46<sup>th</sup> Bomber Army's 21 heavy bombers, with their combined arsenal of more than 1,800 attributed nuclear weapons. The Ukrainian government's long-awaited decision would involve both Russia and the United States, and it would thrust the Nunn-Lugar CTR assistance program directly into the heart of a major, new international accord: the Trilateral Agreement of 1994. In doing so, it also influenced the future of the U.S.-Kazakhstan and U.S.-Russian CTR assistance programs.

In a second, unexpected development, Secretary of Defense Les Aspin abruptly resigned in December 1993. Following the sudden death and injuries to U.S. Army Rangers in Mogadishu, Somalia, President Clinton asked for Aspin's resignation.<sup>153</sup> The new secretary, William Perry, took office in January 1994 just as Clinton, Yeltsin and Kravchuk signed the Trilateral Agreement in the Kremlin. Immediately, Secretary Perry made it his top priority to carry out all of the United States' CTR commitments to Ukraine. With that, everything changed.

## Endnotes

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<sup>1</sup> Yevgeny P. Maslin, "Russian-U.S. Cooperation on Nuclear Weapons Safety," John M. Shields and William C. Potter, eds., *Dismantling the Cold War: U.S. and NIS Perspectives on the Nunn-Lugar Cooperative Threat Reduction Program*, (Cambridge: Harvard University Press, 1997), p. 142.

<sup>2</sup> Vladimir Orlov, Roland Timberbaev, and Anton Khloppkov, *Nuclear Nonproliferation in U.S.-Russian Relations: Challenges and Opportunities*, (Moscow: PIR Center, 2002), pp. 161-162. See also Gunnar O. Arbman and Charles L. Thornton, "Russia's Tactical Nuclear Weapons Part I: Background and Policy Issues," *FOI Report, Part I*, (Stockholm: Swedish Defense Research Agency, 2003).

<sup>3</sup> *Arms Control Reporter*, 1992, pp. 407.E.59-108. This section describes the movement of forces from Central European nations and the Baltic States into Russia.

<sup>4</sup> *Arms Control Reporter*, 1993, pp. 407.E.109-113.

<sup>5</sup> Joseph P. Harahan and John C. Kuhn, *On-Site Inspections Under the CFE Treaty: A History of the On-Site Inspection Agency and CFE Treaty Implementation, 1990-1996*, (Washington, D.C.: On-Site Inspection Agency, U.S. Department of Defense, 1996), pp. 73-77.

<sup>6</sup> *Ibid.*, pp. 89-90.

<sup>7</sup> William E. Odom, *The Collapse of the Soviet Military*, (New Haven: Yale University Press, 1998), pp. 388-404. This point constitutes one part of Odom's conclusion.

<sup>8</sup> Dmitry Litovkin, "A Cooperation Between the 12<sup>th</sup> Main Directorate of the Ministry of Defense of the Russian Federation and the U.S. Department of Defense under the Cooperative Threat Reduction Program," in Ivan Sfranchuk, ed., *Cooperative Threat Reduction Program: How Efficient?*, (Moscow: PIR Center, 2000), pp.13-17. See also, John Pike, "Russian National-Level Nuclear Weapons Storage," *GlobalSecurity.org*, at [www.globalsecurity.org/wmd/world/russia/storage.htm](http://www.globalsecurity.org/wmd/world/russia/storage.htm) accessed on 29 December 2011. Also, Orlov, Timberbaev, and Khloppkov, *Nuclear Nonproliferation in U.S.-Russian Relations*.

<sup>9</sup> Maslin, "Russian-U.S. Cooperation on Nuclear Weapons Safety," in Shields and Potter, eds., *Dismantling the Cold War*, p 142.

<sup>10</sup> Joseph P. Harahan, *On-Site Inspections Under the INF Treaty: A History of the On-Site Inspection Agency and INF Treaty Implementation, 1988-1991*, (Washington, D.C.: On-Site Inspection Agency, U.S. Department of Defense, 1993), pp. 41, 85, 110, 160.

<sup>11</sup> Harahan and Kuhn, *On-Site Inspections Under the CFE Treaty*, pp. 73-77. Interview, Lieutenant General Vladimir I. Medvedev, Director Nuclear Risk Reduction Center, MiniPstry of Defense, Russian Federation with Joseph P. Harahan, Historian, On-Site Inspection Agency, Magna, Utah, 30 August 1994.

<sup>12</sup> *Ibid.* See also, Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Secretary of Defense for CTR (, 1994-1997), U.S. Department of Defense, with Joseph P. Harahan, Senior Historian, DTRA, West Wilton, New Hampshire, 31 March 2004.

## With Courage and Persistence

<sup>13</sup> Mitchell Reiss, *Bridled Ambition: Why Countries Constrain Their Nuclear Ambitions*, (Washington, D.C.: Woodrow Wilson Center Press, 1995), pp. 89-182.

<sup>14</sup> The Russian Federation's Foreign Policy Concept was issued in April 1993. See, *Nezavisimaya Gazeta*, 29 April 1993.

<sup>15</sup> Maslin, "Russian-U.S. Cooperation on Nuclear Weapons Safety," in Shields and Potter, eds., *Dismantling the Cold War*, p. 142.

<sup>16</sup> Statement, Under Secretary Reginald Bartholomew, U.S. State Department, to U.S. Senate Foreign Relations Committee, SH 102-510, 5 February 1992. See also, Interview, Ambassador William Courtney, U.S. Ambassador to Kazakhstan (1992-1995), with Joseph P. Harahan, Historian, DTRA, 28 August 2002. During the fall and winter of 1991-1992, Courtney worked with the U.S.-Soviet-Russian delegations in a series of technical meetings. See too, Statement, Major General William F. Burns, U.S. Army (retired), Special Envoy on the Safety, Security, and Dismantlement of Nuclear Weapons, Department of State, to U.S. Senate, Committee on Foreign Relations, SH 102-872, 27 July 1992.

<sup>17</sup> Brief Biography, Mikhailov, Victor Nikitovich, Member Russian Academy of Sciences. See too, Interview, Dr. Victor N. Mikhailov, Minister of Atomic Energy (1992-1998), Russian Federation and Scientific Director of the Sarov Nuclear Center (1999-2005), Russian Federation, with Joseph P. Harahan, Historian, DTRA, U.S. Department of Defense, Moscow, Russia, 19 January 2005.

<sup>18</sup> Michael Weins, "Accord at Summit," *New York Times*, 17 June 1992, pp. A1-A10. For the actual agreement see "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, D.C., 17 June, 1992. The agreement was signed by George Bush and Boris Yeltsin.

<sup>19</sup> "Agreement Between the Department of Defense of the United States of America and the President's Committee on Conventional Problems of Chemical and Biological Weapons of the Russian Federation Concerning the Safe, Secure, and Ecologically Sound Destruction of Chemical Weapons," Washington, D.C., 30 July 1992. "Agreement Between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning the Safe and Secure Transportation of Nuclear Weapons Through the Provision of Cargo and Guard Railcar Conversion Kits," Moscow, Russia, 28 August 1992. "Agreement Between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning Technical Assistance for the Design of a Safe, Secure, and Ecologically Sound Storage Facility for Fissile Material Derived from the Destruction of Nuclear Weapons," Washington, D.C., 5 October 1992.

<sup>20</sup> Committee hearings in the Russian Federation's Congress of People's Deputies, cited in, Vladimir Orlov, ed., *Guidebook: Global Partnership Against the Spread of Weapons of Mass Destruction*, (Moscow: Human Rights Publishers, 2006), pp. 13-16.

<sup>21</sup> For Dr. Mikhailov's testimony see, Orlov, ed. *Guidebook*, pp. 14-15.

<sup>22</sup> *Ibid.*, pp. 15-16.

<sup>23</sup> *Ibid.*, p. 16.

<sup>24</sup> *Ibid.*, p. 16.

<sup>25</sup> *Ibid.*, p. 13.

<sup>26</sup> *Interfax*, Moscow, 4 November 1992. "Deputy Defense Minister Details Costs," *FBIS-SOV 1992*, 5 November 1992. Fred Haitt, "Russian Duma Ratifies Treaty," *Washington Post*, 5 November 1992.

<sup>27</sup> Maslin, "The CTR Program and Russia's National Security Interests," in Safranchuk, ed., *The Cooperative Threat Reduction Program*, (Moscow: PIR Center, 2000), pp. 4-8.

<sup>28</sup> Interview, Dr. Alexi Arbatov, Deputy Chairman, Defense Committee, DUMA, Russian Federation, with Joseph P. Harahan, Historian, DTRA, U.S. Department of Defense, Moscow, Russia, 21 January 2005.

<sup>29</sup> Interview, Arbatov, 21 January 2005.

<sup>30</sup> "Minutes of the Congress of People's Deputies of the Russian Federation," *Rossiskaya Gazeta*, 19 December 1992, cited in, Orlov, ed., *Guidebook*, pp. 15-16.

<sup>31</sup> Maslin quote from, Orlov, ed., *Guidebook*, p. 12.

<sup>32</sup> Oleg Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 216-217.

<sup>33</sup> U.S. Department of State, Fact Sheet: Safe and Secure Dismantlement of Nuclear Weapons in the New Independent States, 3 January 1994. Jason D. Ellis, *Defense By Other Means: The Politics of US-NIS Threat Reduction and Nuclear Security Cooperation*, (Westport 2001), pp. 32-33.

<sup>34</sup> Alexander A. Pikayev, "The CTR Program in Russia: Is a New Start Possible? A Russian View," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 103-137. Pikayev was very critical of the amount of Nunn-Lugar funds that reached Russia in these years. This view was seconded by another Russian analyst in, Orlov, "Perspectives of Russian Decision-makers and Problems of Implementation," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 85-102.

<sup>35</sup> Arbman and Thornton, *Russia's Tactical Nuclear Weapons Part.*

<sup>36</sup> Dmitry Litovkin, "A Cooperation Between the 12<sup>th</sup> Main Directorate of the Ministry of Defense of the Russian Federation and the U.S. Department of Defense under the Cooperative Threat Reduction Program," in Ivan Sfranchuk, ed., *Cooperative Threat Reduction Program: How Efficient?*, (Moscow: PIR Center, 2000), pp. 13-17. Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 215-216.

<sup>37</sup> U.S. Department of Defense, "Proliferation: Threat and Response," November 1997. See also, "Russian National-Level Nuclear Weapons Storage," *GlobalSecurity.org*, at [www.globalsecurity.org/wmd/world/russia/storage.htm](http://www.globalsecurity.org/wmd/world/russia/storage.htm) accessed on 29 December 2011.

<sup>38</sup> Maslin, "The CTR Program and Russia's National Security Interests," in Sfranchuk, ed., *Cooperative Threat Reduction Programs*, p. 5.

<sup>39</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning the Safe and Secure Transportation and Storage of

Nuclear Weapons Through the Provision of Armored Blankets," Washington, D.C., 17 June 1992.

<sup>40</sup> The armored blankets were delivered in panels so that they could be expanded or contracted around the containers. For security reasons, the Russian 12<sup>th</sup> Main Directorate did not allow access to the actual warhead containers.

<sup>41</sup> Briefing, Dr. John Birely, Assistant to the Secretary of Defense for Atomic Energy, 10 November 1993.

<sup>42</sup> Maslin, "Russian-U.S. Cooperation on Nuclear Weapons Safety," in Shields and Potter, eds., *Dismantling the Cold War*, p. 145.

<sup>43</sup> Ibid.

<sup>44</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning the Safe and Secure Transportation and Storage of Nuclear Weapons Through the Provision of Emergency Response Equipment and Related Training," Washington, D.C., 17 June 1992.

<sup>45</sup> Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, p. 214.

<sup>46</sup> Briefing, Birely, 10 November 1993.

<sup>47</sup> Maslin, "Russian-U.S. Cooperation on Nuclear Weapons Safety," in Shields and Potter, eds., *Dismantling the Cold War*, p. 145.

<sup>48</sup> Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, CTR Cooperative Threat Reduction Directorate, Defense Threat Reduction Agency, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 20 July 2004.

<sup>49</sup> Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, p. 216.

<sup>50</sup> Ibid.

<sup>51</sup> Litovkin, "Cooperation Between the 12<sup>th</sup> GUMO and the U.S. DOD within the CTR Framework," in Sfranchuk, ed., *Cooperative Threat Reduction Program*, p. 14.

<sup>52</sup> Interview, Moon, 20 July 2004.

<sup>53</sup> Ibid.

<sup>54</sup> Cited in Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 222-223. For von Hippel's article see, Frank von Hippel, "Working in the White House on Nuclear Nonproliferation and Arms Control: A Personal Report," *FAS Public Interest Report*, vol. 48, no.2 (1995).

<sup>55</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning the Safe and Secure Transportation of Nuclear Weapons Through the Provision of Cargo and Guard Railcar Conversion Kits," Moscow, 28 August 1992.

<sup>56</sup> Briefing, Birely, 10 November 1993.

<sup>57</sup> Maslin, "Russian-U.S. Cooperation on Nuclear Weapons Safety," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 145-146.

<sup>58</sup> David Albright, Frans Berkhout, and William Walker, *Plutonium and Highly Enriched Uranium 1996, World Inventories, Capabilities, and Policies*, (New York: Oxford University Press, 1997). Joseph Cirincione, Jon B. Wolfsthal, and Miriam Rajkumar, *Deadly*

*Arsenals: Tracking Weapons of Mass Destruction*, (Washington, D.C.: Carnegie Endowment for International Peace, 2002), pp. 179-180.

<sup>59</sup> Statement of Reginald Bartholomew, Under Secretary of State for International Security, Department of State, to the U.S. Senate, Foreign Relations Committee, SH 102-510, 5 February 1992. For the diplomatic context see, James A. Baker III and Thomas M. DeFrank, *The Politics of Diplomacy: Revolution, War and Peace, 1989-1992*, (New York: GP Putnam's Sons, 1995), pp. 558-586, 588-613, 614-636. Also, James M. Goldgeiger and Michael McFaul, *Power and Purpose: U.S. Policy Toward Russia After the Cold War*, (Washington, D.C.: Brookings Institution Press, 2003), pp. 18-40, 41-59.

<sup>60</sup> Statement of Reginald Bartholomew, Under Secretary of State for International Security, Department of State, to the U.S. Senate, Foreign Relations Committee, SH 102-510, 5 February 1992.

<sup>61</sup> This figure, 45,000, represented the design capacity of the Soviet nuclear complex. See, Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, p. 228.

<sup>62</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of Atomic Energy of the Russian Federation Concerning the Safe and Secure Transportation and Storage of Nuclear Weapons through the Provision of Fissile Materials Containers," Washington, D.C., 17 June 1992.

<sup>63</sup> Ibid., see Annex A.

<sup>64</sup> Interview, Mikhailov Interview, Dr. Victor N. Mikhailov, former Minister of Atomic Energy of the Russian Federation, with Dr. Joseph P. Harahan, Historian, DTRA, U.S. Department of Defense, 19 January 2005.

<sup>65</sup> Briefing, Birely, 10 November 1993.

<sup>66</sup> Interview, Mikhailov, 19 January 2005.

<sup>67</sup> Ibid.

<sup>68</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning Technical Assistance for the Design of a Safe, Secure, and Ecologically Sound Storage Facility for Fissile Material Derived from the Destruction of Nuclear Weapons," Washington, D.C., 5 October 1992.

<sup>69</sup> Briefing, Birely, 10 November 1993.

<sup>70</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of the Russian Federation for Atomic Energy Concerning the Provision of Material, Services, and Training Related to the Construction of a Safe, Secure, and Ecologically Sound Storage Facility for Fissile Material Derived from the Destruction of Nuclear Weapons," 2 September 1993.

<sup>71</sup> Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 216-217.

<sup>72</sup> Briefing, Birely, 10 November 1993.

<sup>73</sup> Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, p. 217.

<sup>74</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of the Russian Federation

for Atomic Energy Concerning Control, Accounting, and Physical Protection of Nuclear Material," 2 September 1993.

<sup>75</sup> Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 220-221. See also, Orlov, Timberbaev, and Khloppkov, *Nuclear Nonproliferation in U.S. Russian Relations*, pp. 215-217.

<sup>76</sup> General Accounting Office, "Report on Weapons of Mass Destruction: Reducing the Threat from the Former Soviet Union," October 1994.

<sup>77</sup> Pikayev, "The CTR Program in Russia," in Shields and Potter, eds., *Dismantling the Cold War*, p. 110.

<sup>78</sup> Ibid., p. 110. See also, Jessica Eve Stern, "Cooperative Activities to Improve Fissile Material Protection, Control, and Accounting," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 309-343.

<sup>79</sup> In October 1992, *Arms Control Today* devoted an entire issue to examining negotiations, issues, definitions, and inspection regimes in the Chemical Weapons Convention. See, "The Chemical Weapons Convention Banning the Poisons of War," *Arms Control Today*, October 1992 (Washington, D.C.).

<sup>80</sup> For a published copy of the CWC Treaty see, *Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on their Destruction*, U.S. Arms Control and Disarmament Agency, (Washington, D.C.: October 1993). For the number of nation joining the treaty see, Thomas Stock and Anna de Geer, "Chemical Weapon Developments" in *Stockholm International Peace Research Institute (SIPRI) Yearbook 1994: World Armaments and Disarmament*, (New York: Oxford University Press, 1994), pp. 314-342.

<sup>81</sup> Russian Federation Federal Investigative Service Report, *A New Challenge After the Cold War: Proliferation of Weapons of Mass Destruction*, JPPS-TND-93-007.

<sup>82</sup> U.S. Congress, Office of Technological Assessment, Report, *Proliferation of Weapons of Mass Destruction: Assessing the Risks*, OTA-ISC-559 (August 1993).

<sup>83</sup> CWC Treaty, *Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on their Destruction*, ACDA, 1993, p. 2.

<sup>84</sup> For a good overview of the challenges facing U.S. and Russian officials in destroying their chemical weapons stockpiles in 1992-1993 see, Paul Doty, "The Challenge of Destroying Chemical Weapons," in *Arms Control Today*, October 1992, pp. 25-29.

<sup>85</sup> See, Igor Khripunov, "U.S. Assistance to Russia's Chemical Demilitarization Efforts," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 363-366.

<sup>86</sup> Government Accounting Office Report, "Weapons of Mass Destruction: Reducing the Threat from the Former Soviet Union: An Update," 9 June 1995, pp. 16-17.

<sup>87</sup> Khripunov, "U.S. Assistance to Russia's Chemical Demilitarization Efforts," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 363-381.

<sup>88</sup> Report, Office of the Secretary of Defense to the U.S. Congress, "Quarterly Report on Program Activities to Facilitate

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<sup>89</sup> Stock and de Geer, "Chemical and Biological Weapons," in *SIPRI Yearbook 1995*, pp. 341-342.

<sup>90</sup> For the text of the U.S.-Soviet Union MOU Agreement see, *SIPRI Yearbook 1991*, pp. 536-539.

<sup>91</sup> See, "Amendment to the Agreement between the Department of Defense of the United States of America and the President's Committee on Problems of Chemical and Biological Weapons of the Russian Federation Concerning the Safe, Secure and Ecologically Sound Destruction of Chemical Weapons," Moscow, 18 March 1994.

<sup>92</sup> Teresa Hitchens, "U.S. eyes Russian chemical aid: Congress may increase funding for deconstruction site," *Defense News*, 29 May 1994, p. 34. For context see, Stock and de Geer, "Chemical and Biological Weapons," in *SIPRI Yearbook 1995*, pp. 351-352.

<sup>93</sup> GAO Report, "Weapons of Mass Destruction: Reducing the Threat from the Former Soviet Union: An Update," 9 June 1995, pp. 16-19. In November 1994 the leadership changed in Congress and the new leaders were very critical of the CW projects in Russia. For the political context see, Dunbar Lockwood, "The Nunn-Lugar program: No Time to Pull the Plug," *Arms Control Today*, June 1995, pp. 8-13.

<sup>94</sup> R. Alan Moody, "The International Science Center Initiative," in Shields and Potter, eds., *Dismantling the Cold War*, p. 254.

<sup>95</sup> Ibid., pp. 254-255. For background see, U.S. State Department, International Science and Technology Center Fact Sheet, 12 June 1992.

<sup>96</sup> Moody, "The International Science Center Initiative," in Shields and Potter, editors, *Dismantling the Cold War*, pp. 255-256.

<sup>97</sup> See, R. Jeffrey Smith, "Gates Fears Soviet 'Brain Drain'," *Washington Post*, 16 January 1992.

<sup>98</sup> Moody, "The International Science Center Initiative," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 261-262.

<sup>99</sup> Ibid., p. 262.

<sup>100</sup> "Russian Science and Technology Center Agreement Signed," *U.S. Department of State Dispatches*, 7 December 1992.

<sup>101</sup> Ildar A. Akhtamzian, "The International Science and Technological Center: Bureaucratic Games," *The Nonproliferation Review*, vol. 3, no. 1 (Fall 1995), p. 79.

<sup>102</sup> Moody, "The International Science Center Initiative," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 262, 267-271.

<sup>103</sup> Briefing, CTR Program Office, "DOD CTR Funding Status, FY92 - FY98," no date.

<sup>104</sup> USIS News Release, "First Meeting of the International Science and Technological Center Board," 18 March 1994.

<sup>105</sup> Moody, "The International Science Center Initiative," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 262, 267-271. Also, Briefing, CTR Program Office," no date.

<sup>106</sup> Oles Lomacky, Executive Director, *First Annual Report: The International Science and Technological Center*, (March-December 1994), Moscow, Russia, September 1995.

<sup>107</sup> Public Law 103-160, "National Defense Act" for FY 1994, November 30, 1993, gave the Secretary of Defense the authority

to transfer CTR funds to the departments of State and Energy. In December 1994, Secretary Perry transferred the mission and the money for the ISTC to the State Department. See Moody, "The International Science Center Initiative," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 270-271.

<sup>108</sup> Lomacky, *First Annual Report*.

<sup>109</sup> Akhtamzian, "International Science and Technological Center," p. 82. Moody, "International Science Center Initiative," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 251-289. Sharon K. Weiner, "Preventing Nuclear Entrepreneurship in Russia's Nuclear Cities," *International Security*, vol. 27, no. 2 (Fall 2002), pp. 126-158.

<sup>110</sup> Ashton B. Carter and William J. Perry, *Preventive Defense: A New Security Strategy for America*, (Washington, D.C.: Brookings Institution Press, 1999), pp. 72-82.

<sup>111</sup> Carter and Perry, *Preventive Defense*, p. 73. Interview with Mr. Jim Reid, Director, CTRCooperative Threat Reduction Policy Office, Office of the Secretary of Defense, with Dr. Joseph P. Harahan, Historian, DTRA, 1 May 2000. Interview with Dr. Harold P. Smith, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs (1993-1998.) with Dr. Joseph P. Harahan, Historian, DTRA, 14 December 2001. Interview Ms. Laura S.H. Holgate, Special Assistant to Assistant Secretary of Defense for International Policy, with Dr. Joseph P. Harahan, Historian, DTRA, 20 June 2002.

<sup>112</sup> Strobe Talbott, *The Russia Hand: A Memoir of Presidential Diplomacy*, (New York: Random House, 2002).

<sup>113</sup> See Ellis, *Defense By Other Means*, pp. 49-77.

<sup>114</sup> *Arms Control Reporter*, 1993, pp. 611.B.802.

<sup>115</sup> Interview, Ambassador James Goodby, U.S. Ambassador for the Safe, Secure, and Dismantlement Talks (1993-1994), with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 March 2005.

<sup>116</sup> Sfranchuk, "ESOA Program in Russia," in Sfranchuk, ed., *The Cooperative Threat Reduction Program*, p. 26.

<sup>117</sup> Interview, Nikolai Ivanovich Shumkov, Director (retired), Department of Missile Technologies, Federal Space Agency, and Director, Administration for Disposition of Weapons and Materiel, MOD, Russian Federation, with Joseph P. Harahan, Historian, DTRA, Moscow, Russia, 20 July 2005.

<sup>118</sup> "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," 23 August 1993.

<sup>119</sup> Beginning in 1995, DoD's CTR Program Office began using a chart, dubbed the "Scorecard," to illustrate the specific number of missiles, bombers, submarines, and launchers had been eliminated and how many would be under the START I Treaty timelines.

<sup>120</sup> Pavel L. Podvig, ed., *Russian Strategic Nuclear Forces*, (Cambridge: MIT Press, 2004), pp. 149-150.

<sup>121</sup> Interview, Shumkov, 20 July 2005.

<sup>122</sup> Podvig, ed., *Russian Strategic Nuclear Forces*, pp. 149-150. Interview, Shumkov, 20 July 2005. The July 1994 figure is from the U.S. GAO, Report: "Weapons of Mass Destruction: Reducing the

Threat from the Former Soviet Union: An Update," 9 June 1995, pp. 13-14.

<sup>123</sup> Podvig, ed., *Russian Strategic Nuclear Forces*, pp. 149-150. Interview, Major General (Ret.) Vasily Lata, Director, director Strategic Plans, SRF, MOD, Russian Federation, with Joseph P. Harahan, Historian, DTRA, Moscow, Russia, 25 January 2005.

<sup>124</sup> There were times when this fact was not appreciated in Washington, D.C., especially in Congress. For American CTR officials "access" to Russian military bases and sites was always an issue. In some areas, nuclear weapons depots and storage areas, the issue remained a difficult issue for many years.

<sup>125</sup> Interview, Shumkov, 20 July 2005.

<sup>126</sup> This lack of nuclear weapons elimination infrastructure was at the center of many negotiations and programs. See, John W.R. Lepingwell and Nikolai Sokov, "Strategic Offensive Arms Elimination and Weapons Protection, Control, and Accounting," *The Nonproliferation Review*, (Spring 2000), pp. 59-75. See also, Interview, Shumkov, 20 July 2005. Also, Interview, Moon, 20 July 2004. And also Interview, Reid, 1 May 2000.

<sup>127</sup> "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," 23 August 1993.

<sup>128</sup> Ibid.

<sup>129</sup> Ibid.

<sup>130</sup> Interview, Shumkov, 20 July 2005.

<sup>131</sup> "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," 23 August 1993.

<sup>132</sup> Interview, Reid, 1 May 2000.

<sup>133</sup> Sfranchuk, "ESOA Program in Russia," in Sfranchuk, ed., *The Cooperative Threat Reduction Program*, pp. 24-34. Oleg Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 211-229.

<sup>134</sup> Pikayev, "The CTR Program in Russia," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 103-139.

<sup>135</sup> Interview, Shumkov, 20 July 2005.

<sup>136</sup> Interview, John Connell, Chief, Strategic Nuclear Arms Elimination Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 16 February 2001.

<sup>137</sup> Rose Gottemoeller, "Presidential Priorities in Nuclear Policy," in Shields and Potter, eds., *Dismantling the Cold War*, p. 68.

<sup>138</sup> Ibid., p. 69. The Congressional Accounting Office issued a series of reports in these years that were critical of the DoD's implementation of the Nunn-Lugar/CTR program in Russia and other nations.

<sup>139</sup> Carter and Perry, *Preventive Defense*, p. 74.

<sup>140</sup> Among the most important were: GAO, Reports, "Soviet Nuclear Weapons: Priorities and Costs Associated with U.S. Dismantlement Assistance," 3 February 1993; "Soviet Nuclear Weapons: U.S. Efforts to Help Former Soviet Republics Secure and Destroy Weapons," 3 September 1993; "Weapons of Mass Destruction: Reducing the Threat from the Former Soviet Union,

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10 June 1994; "Former Soviet Union: U.S. Bilateral Programs Lacks Effective Coordination," 2 July 1995; "Weapons of Mass Destruction: Reducing the Threat from the Former Soviet Union: An Update," 6 September 1995; and "Former Soviet Union: Information on U.S. Bilateral Program Funding," 15 December 1995.

<sup>141</sup> Orlov, "Perspectives of Russian Decision-makers and Problems of Implementation," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 85-102.

<sup>142</sup> *Ibid.*, pp. 100-102.

<sup>143</sup> Bukharin, "MinAtom and Nuclear Threat Reduction Activities," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 211-229.

<sup>144</sup> Dr. Viktor Mikhailov's quote in, Orlov, "Perspectives of Russian Decision-makers and Problems of Implementation," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 92-93.

<sup>145</sup> Pikayev, "The CTR Program in Russia," in Shields and Potter, eds., *Dismantling the Cold War*, pp. 103-104.

<sup>146</sup> *Ibid.*, pp. 126-129.

<sup>147</sup> Deputy Foreign Minister Mamedov's quote cited in, Orlov, "Perspectives of Russian Decision-makers and Problems of Implementation," in Shields and Potter, eds., *Dismantling the Cold War*, p. 93.

<sup>148</sup> Prime Minister Chernomyrdin's statement is cited in, Orlov, "Perspectives of Russian Decision-makers and Problems of Implementation," in Shields and Potter, eds., *Dismantling the Cold War*, p. 93.

<sup>149</sup> *Ibid.*, p. 93. Special Assistant Baturin's statement is cited in this article.

<sup>150</sup> *Ibid.*, p. 93, for NSC Deputy Secretary Mamilov's quote.

<sup>151</sup> *Ibid.*, p. 92, for Colonel General Maslin's statement.

<sup>152</sup> See also, Senator Sam Nunn, "Foreword: Changing Threats in the Post-Cold War World," in Shields and Potter, eds., *Dismantling the Cold War*, p. xii. Both Senators Nunn and Lugar led congressional delegations to the region, seeking out government, military, and political leaders, and discussing the joint programs. They admitted past difficulties, but insisted that the problem of the weapons of mass destruction was so serious that every government had to recognize and work on the issue.

<sup>153</sup> Mark Bowden, *Black Hawk Down: A Story of Modern War*, (New York: Penguin Group, 2002). See also, John F. Harris, *The Survivor: Bill Clinton in the White House*, (New York: Random House, 2005), pp. 121-125.

## Resolving Ukraine's Nuclear Inheritance

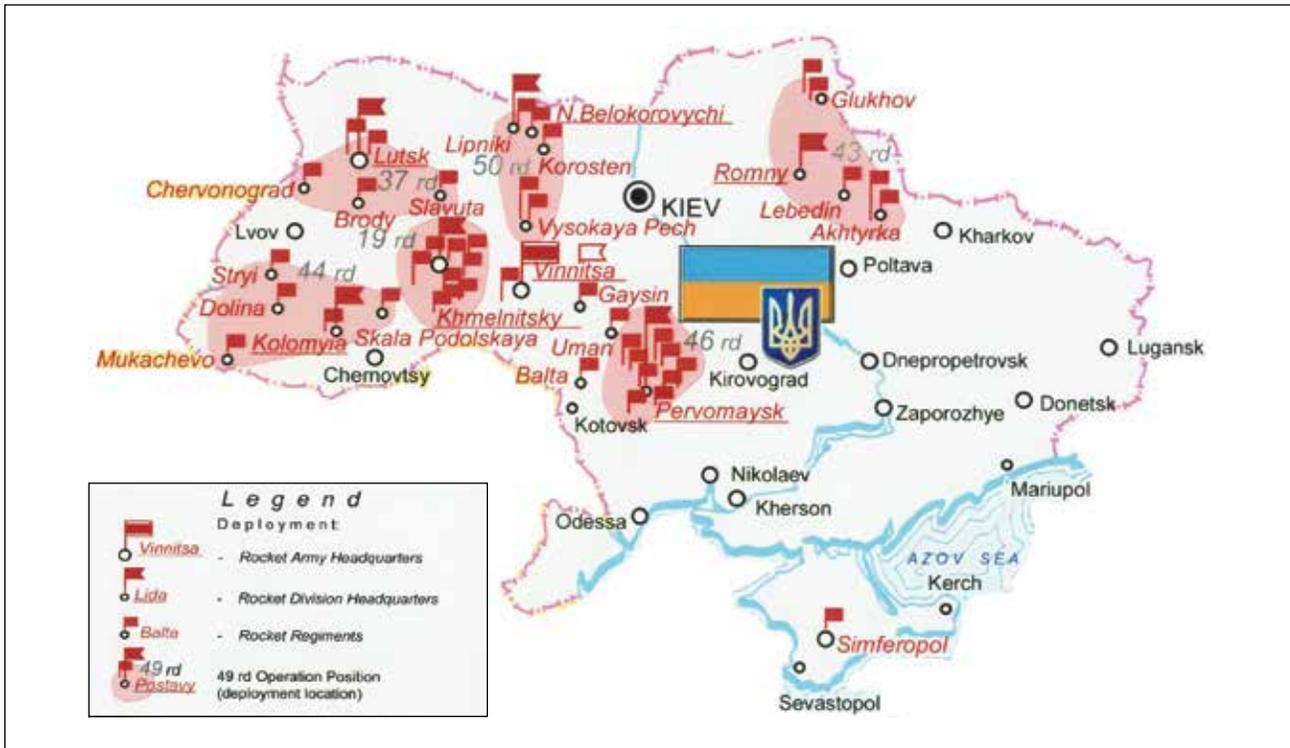
Resolving Ukraine's nuclear inheritance was difficult. Theoretically, sovereign states control all military forces stationed on their territory, either directly or through status of forces agreements. However, when Ukraine became an independent state in December 1991, President Kravchuk signed agreements in Minsk and Almaty ceding operational control over the strategic nuclear forces on its territory – the rocket and bomber armies – to the new Commonwealth of Independent States (CIS) Armed Forces, headquartered in Moscow. Except for those nuclear and naval forces in the Black Sea fleet, Ukraine nationalized all other inherited military forces: the conventional armies, air forces, air defense and paramilitary units. Ukraine required the military officers and men to take a new oath of allegiance, wear new national uniforms, learn and use the Ukrainian language and serve under a civilian Minister of Defense. The distinction between the inherited strategic and conventional forces, which seemed settled at the time of independence, was under constant review throughout 1992 and 1993.

On this issue Ukrainian leaders were inconsistent. First they acknowledged, and then they challenged, the legitimacy of the CIS Armed Forces' control over the strategic nuclear forces, the rocket and bomber armies on their territory. At the urging of the United States, Ukrainian leaders signed the Strategic Arms Reduction (START) Treaty's Lisbon Protocols in May 1992 and pledged to eliminate, following ratification, all of the missiles and bombers the treaty required. Yet Ukraine's parliament delayed consideration of the treaty month after month. By the time of the final vote on ratification, it had attached so many conditions

that Russia and the United States refused to accept it. At one point, President Kravchuk declared that the government had assumed "administrative" control over the strategic nuclear forces in Ukraine. At another point the Minister of Defense insisted that the national oath of allegiance be administered to all personnel in the strategic forces. Later, the Ukrainian government and parliament claimed that the nation "owned" the nuclear weapons and nuclear materials.

Russian leaders rejected all Ukrainian claims of control or ownership. From June 1992 forward, Russia demanded that Ukraine remove the strategic nuclear forces on its territory from alert status, decommission them and return the nuclear warheads to the Russian Federation. Nationalistic and distrustful, Ukraine refused Russia's stipulations. For nearly two years, claims, rejections, demands and counterclaims raged between Russia and Ukraine. This bickering was visible in public many times. The dispute over the status and future of these nuclear forces on Ukrainian territory became bitter and complex, involving security guarantees, regional dominance, national military strategies, economic compensation and dismantlement assistance. The United States' diplomatic and defense leaders had little influence in these rancorous Russian-Ukrainian bilateral negotiations, except in the final months of 1993.

At the center of this storm were Colonel General Mikhtyuk and the 43<sup>rd</sup> Rocket Army. In comparison to Belarus, which had inherited 81 SS-25 missiles mounted on truck-driven mobile launchers, the 43<sup>rd</sup> Rocket Army had 139 SS-19 and 46 SS-24 intercontinental ballistic missiles (ICBM) located in fixed, reinforced concrete silos. They could not be moved.



Deployment of 43<sup>rd</sup> Rocket Army in Ukraine

In Belarus, the Supreme Soviet parliament had acted quickly, voting to return the missiles and warheads to Russia. In Ukraine, the government did not act quickly; the 43<sup>rd</sup> Rocket Army remained in place.

### Status of the 43<sup>rd</sup> Rocket Army

Considering the contentious relationship between Ukraine and its powerful neighbor, one of the remarkable aspects of the developing situation in Ukraine was the willingness of the 43<sup>rd</sup> Rocket Army's commander, General Mikhtyuk, to meet with Ukrainian, Russian and even American delegations. In March 1992, General Kostiantyn Morozov, Ukraine's Minister of Defense, and Anatoly Zlenko, Minister of Foreign Affairs, traveled to Pervomaysk, the 46<sup>th</sup> Rocket Division headquarters, where they met the commanding general and division officers. They toured a missile complex command post for SS-24s, inspected the launching systems and the nuclear weapons storage depot, and talked with the rocket division's officers and men. General Mikhtyuk briefed the defense minister, a former fighter pilot, and the foreign minister, once a university professor, on the rocket army's personnel, finances and security. Speaking with the

benefit of 36 years of experience as a Strategic Rocket Forces officer, the general explained the consequences of the Soviet Union's collapse on the rocket army. The former centralized systems, he told them, for monitoring and replacing critical warhead and missile parts had broken down. The complex missile systems required technical expertise from design and production bureaus to provide the operational missile forces with periodic and specialized maintenance inspections on the nuclear weapons complexes. That system was not functioning. Finally, funding for all of the complex operations and maintenance functions needed to sustain a large, modern strategic rocket army in the field, which had never been problematic before, was now drying up.<sup>1</sup>

Everyone at the meeting knew that both the Russian and Ukrainian economies were under stress. Inflation was just beginning and both governments were trying to sustain their military-industrial economies with decreasing revenues. When the meeting concluded, Defense Minister Morozov said that he was sympathetic to General Mikhtyuk's difficult situation, telling reporters that once Ukraine and Russia resolved the "ownership" issue of the nuclear weapons then technical assistance for the rocket army could be negotiated quickly.<sup>2</sup> Exactly one month later, Ukraine's president and his

defense minister made abundantly clear how they intended to “resolve” the ownership issue. On April 4, 1992, President Kravchuk ordered that the 43<sup>rd</sup> Rocket Army and the 46<sup>th</sup> Air Army be incorporated into the Ukrainian Armed Forces.<sup>3</sup> 10 days later, General Morozov told a congress of the Ukrainian Officers Union in Kiev, “Whoever does not take the oath of allegiance can resign.”<sup>4</sup>

In fact, very few officers took the oath or resigned. The 43<sup>rd</sup> Rocket Army was not incorporated into the Ukrainian Armed Forces, nor was it involved in any of the negotiations between Russia and Ukraine over its future. “I think it was the right decision,” General Mikhtyuk recalled later, “not involving the strategic missile specialists in the discussions concerning their future.”<sup>5</sup> From time to time, Mikhtyuk would travel from the army’s headquarters in Vinnitsa to

technical and nuclear surety inspections, debugging of computers, and continuous remote monitoring of the status of the missile launching systems. Throughout 1992 and 1993, a reduced rocket army of approximately 20,000 men kept the missile complexes on continuous operational alert and General Mikhtyuk demanded it meet all of the Strategic Rocket Forces’ current operational and technical standards. The 139 SS-19 missiles, each with six nuclear warheads, and 46 SS-24 missiles, with 10 warheads, were located in 190 fixed, buried silos scattered across the Ukrainian countryside. Experienced missile officers monitored the missiles and weapons from command complexes located deep underground in buried command posts.<sup>7</sup> Like all commanders in the Strategic Rocket Forces, General Mikhtyuk relied on technical inspection teams to measure



Defense Threat Reduction Agency

Senator Lugar, Senator Nunn and General Mikhtyuk (l.-r.)

the capital, Kiev, to discuss technical issues with members of the Ukrainian National Security Council and meet with individual deputies and committee members of parliament. However, he prohibited the senior officers from any such discussions. “I gave an order to my deputies and the commanders of the rocket divisions,” he recalled, “not to get into these discussions and to focus all of their efforts on the maintenance of the armaments (missile complexes) and maintaining the equipment in safe condition.”<sup>6</sup>

The 43<sup>rd</sup> Rocket Army was one of the largest in the former Soviet Union. Its operational missile complexes and launch control centers required continuous maintenance, periodic and scheduled replacement of obsolete or broken parts,

### 43<sup>rd</sup> Rocket Army’s missile forces

-  139 SS-19 missiles  
(6 warheads each)
-  46 SS-24 missiles  
(10 warheads each)

and report on the rocket army’s operational standards. These teams reported directly to him on the status of the personnel, equipment and systems working at the missile complexes. Conducted in the field with more than 100 personnel, these large technical inspection teams spent a week or longer working in the missile divisions and regiments – examining the silos, launch control centers, communication systems, security systems and the maintenance centers. According to General Mikhtyuk, these inspections required “a great number of division units, special division services and special industrial teams.”<sup>8</sup>

Yet the constant discussions about their future in the Ukrainian parliament, and media did not escape the officers and men of the 43<sup>rd</sup> Rocket Army. “The situation was not easy,” Mikhtyuk recalled, “the majority [of commanders and officers] wanted to take part in resolving the problem of the 43<sup>rd</sup> Rocket Army’s future.”<sup>9</sup> In fact, the 46<sup>th</sup> Rocket Division’s former commander, Major General Vasily Tolubko, had

resigned his commission, was elected to parliament and advocated that Ukraine retain the 43<sup>rd</sup> Rocket Army, thus making it a nuclear state.<sup>10</sup> While General Tolubko's position was never the majority opinion, it compounded existing tensions. Delegation after delegation arrived at army and division headquarters, either at Vinnitsa, Pervomaysk or Khmelnytsky. They met with the commanding general, discussed the army's status and toured the missile complexes. Invariably, these visitors met with reporters outside the missile base. In July 1993, President Kravchuk and a large delegation traveled to Khmelnytsky to learn first-hand the status of the SS-19 missile complexes.<sup>11</sup> Later in the summer and fall, other Ukrainian, Russian and even American officials visited the headquarters for briefings and traveled out to the missile complexes of the 43<sup>rd</sup> Rocket Army.<sup>12</sup> Such attention, unusual for any military unit, was extraordinary for an operational rocket army in the Strategic Rocket Forces.

General Mikhtyuk used his command presence and personal prestige to persuade the army's officers to remain committed to the mission. "I had many discussions," he recalled, "explaining to them that a sudden emotional decision on this issue (oath of allegiance) could result in negative consequences."<sup>13</sup> The general's order to his strategic missile specialists to abstain from public commentary paid off. A majority of the strategic rocket officers did not take the oath of allegiance or become involved in the national debate. They also did not resign, although many petitioned their missile division commanders for transfers to other SRF rocket armies based in the Russian Federation. Some requests were granted but most were not. Like their commander, the officers and men continued to serve as strategic rocket officers carrying out their duties.

As long as this modern, operational ready strategic rocket army remained in the field, it had value. The preplanned launch codes, apparently remained in the rocket army's underground command and control centers. The missiles' predetermined guidance codes remained within each of the intercontinental missiles. No one denied that authority to launch the nuclear force, the third largest in the world, remained in Moscow. However, everyone admitted that decommissioning the rocket army and removing its nuclear warheads could not be done without the acquiescence of the government and parliament of Ukraine. Some military analysts thought that Ukraine had the scientific, technical, and operational skills to field a nuclear missile and bomber force.<sup>14</sup>

## Resolving Ukraine's nuclear inheritance: three paths

By 1993 there were three courses of action open to the Ukrainian government and parliament. The first proved to be the shortest-lived. Maintaining the existing command structure with the Supreme Commander, CIS Armed Forces controlling the 43<sup>rd</sup> Rocket Army and 46<sup>th</sup> Bomber Army became untenable by mid-year. Nine months earlier, Belarusian and Russian presidents had signed an agreement to return all of the missiles and warheads on the territory of Belarus to Russia.<sup>15</sup> Then in 1993, the Russian General Staff ordered the rocket army and bomber commands based in Kazakhstan to relocate the 104 SS-18 missiles (1,040 warheads) and 40 Tu-160 bombers to bases in Russia.<sup>16</sup> That left only the nuclear arsenals of Russia and Ukraine constituting the CIS Armed Forces. Russia's Minister of Defense, Pavel Grachev, advocated ending the paper-thin nuclear alliance and returning all of the strategic weapons and warheads to Russia. Ukraine objected. President Kravchuk maintained the legal position that the Supreme Commander of the CIS Armed Forces controlled all strategic forces. Speaking at a news conference in May 1993, he told reporters, "If we declare that these weapons belong to Russia, the 43<sup>rd</sup> Rocket Army will no longer be a CIS army, but a Russian army. This would mean the presence of occupying forces on the territory of Ukraine."<sup>17</sup>

Unbeknownst to Kravchuk, in Moscow President Yeltsin, Marshal Shaposhnikov, and Defense Minister Grachev were planning at that moment to end the CIS Armed Forces. On June 15, 1993 at a meeting of the CIS defense ministers in Moscow, Shaposhnikov announced his resignation as the Supreme Commander.<sup>18</sup> Grachev declared that the Russian Federation would not name a successor. Further, he said that Russia would not agree if any of the other states named a new commander.<sup>19</sup> Since all CIS decisions had to be through unanimous consent, the Russian defense minister had achieved a *fait accompli*: with no commander, there was no command. As the meeting ended, the CIS defense ministers endorsed Grachev's recommendation not to appoint a new commander and to set up a lower-level joint staff that would coordinate military cooperation among the states. In practice, these decisions meant that day-to-day command and control over the strategic nuclear forces in the non-Russian states had devolved to the Russian General Staff,

Russian Strategic Rocket Forces, and Russian Air Forces.<sup>20</sup> The concept that the CIS Armed Forces would exist to control all of the region's nuclear forces was over; what remained was the question of ownership of the missiles, bombers and warheads on Ukrainian territory.

Russia's decisive actions forced Ukraine to consider a second course. The Ukrainian government deliberated keeping the 43<sup>rd</sup> Rocket Army and the 46<sup>th</sup> Air Army intact and having the Minister of Defense take operational control over the strategic missiles and bombers. In June, following dismantlement of the nuclear forces command, Prime Minister Leonid Kuchma and a Rada member, Dmytro Pavlychuko, recommended that the government assume operational control over some of the nuclear weapons.<sup>21</sup> Specifically, they argued that the government should assert control over the 46 SS-24 missiles, which had been designed, manufactured and deployed on Ukrainian territory. In July, Rada deputies voted 226 to 15 for a new national defense doctrine that declared the nuclear weapons located on its territory to be Ukrainian property.<sup>22</sup> President Kravchuk supported this doctrine. Defense Minister Morozov directed the Strategic Forces Administrative Control Center in Kiev, an entity the Ministry of Defense established in 1992 with the exclusive task of monitoring the 43<sup>rd</sup> Rocket Army, to assume responsibility for logistical support, and to provide maintenance, personnel and payment systems for the strategic rocket and bomber forces.<sup>23</sup> As these events unfolded, Yeltsin invited Kravchuk to a presidential summit meeting in Moscow. They discussed the collapse of the CIS Armed Forces command, status of nuclear forces and warheads, Black Sea fleet, oil and gas fees, foreign debts, and financial and banking issues.<sup>24</sup> Not one issue was resolved.

## Ukraine's torturous course

By mid-1993 military and political forces seemed to be compelling Ukraine along a trajectory to become a nuclear state. Then in the summer months of 1993, a sudden confluence of other forces pulled the national government on a different course. By July an inventory of the 43<sup>rd</sup> Rocket Army's nuclear warhead storage depots determined that they had exceeded their capacity and that the situation was developing into an acute problem. Three months earlier Colonel General I.D. Sergeev, Commander of the Russian Strategic Rocket Forces, met with General Mikhtyuk in

Pervomaysk, Ukraine for an inspection of the 46<sup>th</sup> Rocket Division's nuclear armament depot.<sup>25</sup> As they toured the depot, Mikhtyuk explained that the facility held 240 warheads, approximately five times its normal capacity. He admitted there were problems with nuclear safety and then told Sergeev that the issue would only worsen if the army did not receive technical assistance from the Strategic Rocket Forces and the Russian General Staff.<sup>26</sup> Following the meeting, General Sergeev told reporters from Russia, Ukraine, and the international wire services that the situation in the 43<sup>rd</sup> Rocket Army was dangerous and that Ukraine's government was incapable of assisting the army with its nuclear safety problems. In his comments to the same reporters, General Mikhtyuk pointedly stated that the Russian SRF had refused to send any nuclear technicians, nuclear components or funds to the rocket army that would have alleviated this problem.<sup>27</sup>



Prime Minister Leonid D. Kuchma

When he returned to Moscow, General Sergeev assigned a small team of Russian nuclear engineers to go to Ukraine, examine the situation and produce a detailed, technical study of the 43<sup>rd</sup> Rocket Army's nuclear storage system. The experts went to Ukraine, investigated and released a report in November stating that "serious infractions in the storage and safety of Ukraine's nuclear warheads could cause a disaster on the same scale as Chernobyl."<sup>28</sup> General Mikhtyuk was well aware of these critical problems; he had briefed numerous Ukrainian delegations as well as the defense minister and the members of the national security council in Kiev. He sent

copies of the Russian experts' report to Ukraine's president, defense, and foreign ministers.<sup>29</sup>

Accumulating warheads was not the general's only problem. In late June, General Mikhtyuk ordered two regiments of SS-19s missiles taken off alert status because the components inside the warheads, the ammunition parts, were past their operational life.<sup>30</sup> The first regiment to be decommissioned was in the 46<sup>th</sup> Missile Division in Pervomaysk. The general's decision was well known, both in Moscow and Kiev. All of the rocket army's intercontinental ballistic missiles, sitting in their remote silos, were continuously monitored for combat status. Daily, weekly and



Ukrainian Defense Minister General Kostiantyn P. Morozov

monthly reports flowed from the rocket army to headquarters of the Strategic Rocket Forces in Moscow.

Following General Mikhtyuk's decision to decommission the two regiments, Ukraine's Defense Minister Morozov announced that the first regiment with 10 missile complexes (silos) would be "deactivated," which meant that the warheads would be separated from the missile, lifted out of the silo, secured, and prepared for safe transport to the division's nuclear storage depot. Russian and Ukrainian nuclear engineers and technicians would work in the field, cooperatively carrying out the dismantlement tasks. Then the defense minister asserted that the "warheads will remain in Ukraine, under Russian supervision and maintenance" until the Ukrainian Rada voted on ratification of the START

I Treaty. Deactivation of the second SS-19 regiment, he announced, would begin approximately six weeks later in mid-September.<sup>31</sup> One result of the SS-19 deactivations and the serious accumulation of warheads was that Ukraine's political leadership realized that the 43<sup>rd</sup> Rocket Army was deteriorating and that the nation could not become a credible nuclear military force. Indeed, many of Ukraine's senior military leaders had never seriously considered a national security strategy based on the existence of nuclear forces. Instead, they saw the 43<sup>rd</sup> Rocket Army, with its fixed silo-based missiles, as a security liability. Missile systems required continuous maintenance, constant security and continuous monitoring for nuclear safety concerns. Finally, senior military officers believed that if Ukraine insisted on retaining these nuclear forces, then military relations with Russia would become and remain problematic.<sup>32</sup>

Even so, military concerns were not enough to force the Ukrainian leaders to change course. To make matters worse, the country's economy was in a severe recession and the government's policies to institute reforms proved to be inept, incoherent and contradictory.<sup>33</sup> By mid-1993, unemployment, or more accurately underemployment, soared to 40 percent. Entire industries had collapsed and there was no new capital investment, except for government funds that propped up hundreds of state-run enterprises. Foreign investors, frightened by the government's inability to manage the economy, transferred their assets, investing in other nations in the region. Capital flight became a major issue. Budget deficits led directly to price inflation. From June to December 1993, Ukraine went through a devastating period of hyperinflation. Prices rose by 50 percent or more each month for six consecutive months, and by 93 percent in December. At that time, the exchange rate reached 38,000 coupons to the dollar.<sup>34</sup> The loss of confidence in the government was so profound that some outside observers speculated that the state would not survive; it would devolve and become a province of the Russian Federation.<sup>35</sup>

In the middle of this the chaotic summer in 1993, Ukraine's president and executive cabinet began developing a framework for negotiating the future of the strategic nuclear forces and the Black Sea fleet. Leading the effort was Deputy Foreign Minister Boris Tarasuk, who chaired a national committee on disarmament. He articulated three conditions for Ukraine to give up its claims to nuclear weapons: security guarantees from the nuclear powers to ensure the

new nations' sovereignty, compensation for the nuclear materials in the weapons, and dismantlement assistance, including housing for displaced officers and environmental restoration.<sup>36</sup> Tarasuk's three point framework became the Kravchuk government's negotiating position and this strategy bore fruit immediately. On July 27, U.S. Secretary of Defense Aspin and Ukrainian Defense Minister Morozov signed a Nunn-Lugar memorandum of understanding in Kiev. The United States pledged \$175 million to assist Ukraine in dismantling the SS-19 missiles.<sup>37</sup> This agreement would go into effect when Ukraine and the United States completed negotiations on terms for a bilateral umbrella agreement. Those negotiations, however, had to wait until the conclusion of a Russian-Ukrainian presidential summit meeting, which would examine all major issues.

In early September, President Yeltsin and his senior ministers flew to Yalta for a summit meeting with President Kravchuk. Held in a hunting lodge built for Joseph Stalin, the meeting became known as the Massandra Summit. All the outstanding Ukrainian-Russian issues were on the table: the future of the nuclear forces and weapons, the Black Sea fleet, national oil and gas debts, security guarantees, compensation for the strategic weapons and warheads, and conversion of the nuclear materials. Ukraine owed Russia more than \$2.5 billion for oil and natural gas credits. A week before the summit, Russia's state-run gas firm, Gazprom, cut gas supplies to Ukraine by 25 percent. Then, Russian Defense Minister Grachev declared that Gazprom would cut off all gas to Ukraine if it did not reach agreement at the summit. During the meeting Yeltsin proposed that Ukraine give up its claim to the Black Sea fleet and all its nuclear warheads. In exchange, Russia would forgive up to \$2.5 billion in gas and oil debts and provide compensation in the form of nuclear fuel rods that would be manufactured from the reprocessed nuclear materials. These fuel rods would be used in Ukraine's nuclear fuel plants. For its part, Ukraine would have to ratify the START I Treaty and Nuclear Non-Proliferation (NPT) Treaty promptly, and transfer all nuclear warheads to Russia within 24 months. Weakened by the economic recession, facing a bleak future without oil and gas, and desperately short of nuclear fuel rods, Kravchuk, Kuchma and the Ukraine government agreed to the Russian terms and signed a series of bilateral agreements giving up its claims to the strategic weapons, warheads, and the Black Sea Fleet.<sup>38</sup>

No sooner had the agreements been signed than every Ukrainian leader involved in the negotiations came under severe public criticism, a situation that caused Defense Minister Morozov to resign immediately. In public, Ukrainian senior government officials rejected the agreement. In Moscow, Russian leaders dismissed the Ukrainian government as incompetent and untrustworthy. One Ukrainian analyst thought the Massandra Summit was a fiasco that "exposed Ukraine's weakness, isolation and lack of options."<sup>39</sup> Relations between Russia and Ukraine reached an all-time low. It was at this precise moment that United States diplomats and defense officials seized the opportunity and engaged both the Ukrainian and Russian governments so forcefully that within a few months a new international agreement had been negotiated, signed and entered into the first phases of implementation.

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### Three points in Ukrainian nonproliferation policy

1. Security Guarantees
2. Compensation
3. Dismantlement Assistance

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### United States engages Ukraine and Russia

U.S. Ambassador William G. Miller arrived in Kiev in September 1993, just as the Massandra summit ended. A career foreign service officer, Miller had worked on the foreign affairs and defense subcommittees of the U.S. Senate Foreign Relations Committee and had been staff director of the Senate Select Committee on Intelligence. He knew Senators Sam Nunn and Richard Lugar well. Prior to arriving in Kiev, he had been briefed by State Department experts that Ukraine was a weak, bankrupt state that would probably fail.<sup>40</sup> Within weeks of taking up his post, Ambassador Miller rejected that assessment and began examining the variances between U.S.-stated policy on the issue of nuclear forces located on the national territory of Ukraine and the government's statements and actions at the Massandra summit. Miller found that the United States had never



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General Vladimir A. Mikhtyuk, U.S. Ambassador William G. Miller and Laura S.H. Holgate (l.-r.)

seriously considered that the nuclear forces in Ukraine were “owned” by that nation as a right of succession. Yet, Ukraine’s president, prime minister, defense and foreign ministers, and a majority of the parliament held this belief and were willing to negotiate that right away, as demonstrated at the summit. Ambassador Miller made the case that the United States should reconsider its policy regarding these forces with Secretary of State Warren Christopher, the State Department and senior officials in the National Security Council.<sup>41</sup>

During the same month, President Clinton had gone to the United Nations where he reaffirmed the United States’ commitment to supporting and encouraging nuclear nonproliferation policies. Speaking at the General Assembly, the president declared: “I have made nonproliferation one of our nation’s highest priorities. We intend to weave it more deeply into the fabric of all our relations with the world’s nations and institutions.”<sup>42</sup> The president and his administration supported the START I Treaty, Lisbon Protocols, NPT Treaty, START II, Chemical Weapons

Convention, the Open Skies Treaty and the Nunn-Lugar assistance program. They also embraced the recent U.S.-Russian negotiations on facilitating and financing the reprocessing of highly enriched uranium in nuclear weapons for commercial sale to nuclear power plants. Not only did Clinton and his senior foreign, defense and national security teams support these broad nonproliferation measures, there was also a consensus in Congress led by Senators Nunn and Lugar.<sup>43</sup>

The United States government developed four major policy objectives for U.S.-Ukraine relations. First, it wanted Ukraine’s parliament, the Rada, to ratify the START Treaty and the Lisbon Protocols. Under consideration in the Rada for nearly 18 months, U.S. officials tried to persuade Kravchuk’s government to force a vote in parliament. Second, the U.S. wanted the Rada to ratify the NPT Treaty, declaring that Ukraine would renounce use of nuclear weapons and become a non-nuclear nation. Third, the U.S. sought to transform U.S.-Ukrainian relations to deal with a broader set of issues than just nuclear forces and arms control treaties. Specifically, it wanted to address economic assistance, student exchanges, defense conversion and trade. Finally, the U.S. wanted to engage Ukraine in negotiations for receiving Nunn-Lugar Cooperative Threat Reduction aid. To this end, Ambassador James Goodby, Chief of the Safe, Secure, Dismantlement Talks, and Gloria Duffy, his deputy, led American delegations to Kiev for meetings in August, October and December. Secretary of Defense Aspin had already stated that the U.S. would provide \$175 million in Nunn-Lugar assistance to Ukraine. Now the two sides needed to negotiate the specific terms.<sup>44</sup>

In Kiev, Ambassador Goodby met with Ukraine’s negotiators; Anton Buteyko, from the National Security Council, Deputy Foreign Minister Boris Tarasuk and Konstantine Hryshchenko, a ministry arms control official. The Ukrainians demanded that the Americans provide new security guarantees, construct new apartments for displaced military officers, carry out environmental restoration of the missile complexes, develop plans for industrial plants to convert the rocket fuels to commercial fuel and provide all the standard heavy dismantlement equipment and technical training and maintenance assistance needed to dismantle the decommissioned missiles and bombers. Foreign Minister Anatoliy Zlenko stated they estimated the total cost for the projects at over \$2.5 billion. Ambassador Goodby

dismissed that figure, reminding them of the U.S. pledge of \$175 million. That set the tone for the negotiations. In discussing the aid, the ambassador and his team learned that the Ukrainian diplomats were in a difficult position, often caught in the crossfire between powerful circles within the Kravchuk government. At one point, Goodby recalled that after five days of contentious meetings in a Kiev hotel, negotiations had come to a standstill. The final night, U.S. Secretary of State Christopher, who was in Ukraine for presidential-level meetings, suggested the two delegations reconvene and try and resolve their differences. They met all night, wrapping up the U.S.-Ukraine umbrella agreement at six o'clock in the morning. As Ambassador Goodby prepared to leave Kiev, he told the press that the U.S. delegation would return in December to negotiate and sign a series of implementing agreements. Just before Secretary Christopher left Kiev, he announced at a press conference that the Clinton Administration would seek from Congress an additional \$155 million in economic assistance for Ukraine.<sup>45</sup>

The next 11 weeks, from late October to mid-January, were extraordinarily important for the future of U.S.-

Ukraine-Russian relations as politicians and diplomats from the three countries engaged in a flurry of activities. Secretary Christopher returned to Kiev; Ambassador Miller convened and joined trilateral discussions; Ambassador Goodby returned with a large, senior delegation; Deputy Secretary of Defense William Perry arrived; Strobe Talbott, U.S. Special Advisor for the New Independent States and Russian Deputy Foreign Minister Georgi Mamedov traveled to Kiev from Moscow; and Vice President Gore telephoned Ukraine's president repeatedly, sending a series of messages and letters.<sup>46</sup> The objective was to negotiate a draft trilateral agreement, one acceptable to Ukraine, Russia, and the United States, that addressed all aspects of the nuclear forces issue. Throughout December, small teams of diplomats and defense officials met in Kiev, hammering out details of the complex trilateral deal. Ukraine's negotiators were willing to give up their claims to the inherited strategic rocket and bomber forces and warheads, but held on to their demands for security guarantees from the great powers for its sovereignty, compensation for the nuclear materials in the strategic weapons, and financial assistance for Ukraine



President William J. Clinton at the United Nations



William J. Clinton Presidential Library

Secretary of State Warren M. Christopher and President William J. Clinton

in dismantling missile and bomber weapons systems. Their fervent nationalism and demands made Russian negotiators suspicious. In the end, the three delegations worked out their differences – mainly because the level of American assistance for dismantling and eliminating the weapons had largely been settled in the CTR umbrella agreement, as had the level of Russian debt forgiveness for Ukraine’s oil and gas debts in the Massandra agreements.

The last week of December, Ambassador Miller formally invited the three nations’ working group to Washington for further meetings in the first week of January. There, the three delegations agreed on a definition clarifying the amount of highly enriched uranium (HEU) in the nuclear warheads, decided that for the next 10 years Ukraine would receive compensation for 10 years in reprocessed nuclear fuel rods, and developed a cost formula for dismantling the warheads in Ukraine and shipping them via rail to storage depots in Russia. Within two days, the three parties had agreed on a draft text, annex and six secret letters. On Monday, January

10, 1994, President Clinton announced that the presidents of the three nations would sign the trilateral agreement at a previously scheduled Moscow summit meeting in mid-January. Clinton said he would fly to Ukraine, meet with President Kravchuk and his ministers, and then the two presidents would travel to Moscow for the summit. As events unfolded, however, doubts emerged that the final, negotiated agreement would ever be signed.<sup>47</sup>

When President Clinton arrived in Kiev, Ukraine’s president and senior government ministers met him at the airport. The “visit” was confined to the airport, and it lasted barely two hours. It was contentious. At a joint news conference, President Kravchuk refused to endorse the trilateral agreement; he also never mentioned that the nation would give up its nuclear weapons, and he did not invite any members of the Rada to join him at the ceremony. Foreign Minister Zlenko and Kravchuk’s national security advisor Buteyko insisted that the negotiated agreement was not final and that negotiations needed to be reopened. According to

Strobe Talbott, who was standing on the tarmac, “Clinton and Christopher, neither of whom was in the habit of roughing up a head of state, decided to make an exception. They told Kravchuk in the bluntest of terms that if he backed out of the deal that had already been made it would be major setback for Ukraine’s relations with both the United States and Russia.”<sup>48</sup> Talbott remembers that “a visibly shaken” Ukrainian president promised he would stick with the agreement as written.

After that Ukrainian interlude, Clinton and Kravchuk and their delegations flew to Moscow, where haggling over the agreement continued. This time it was the Russians’ turn to be difficult. As they drove out of Moscow to a late-night dinner at Yeltsin’s dacha, Clinton learned the Russians so distrusted the Ukrainians that they wanted new guarantees. Victor Mikhailov, Yeltsin’s senior advisor and Minister of Atomic Energy even wanted to crush the agreement. When they arrived at the dacha, Yeltsin stood at the door ready to greet the American president. “Clinton got out of his limousine,” Talbott recalled, “grabbed Yeltsin by the shoulders, leaned close to his face and said that the two of them had to talk alone, right away.”<sup>49</sup> As they walked around the driveway, Clinton told Yeltsin about his scolding of Kravchuk, and that the Ukrainian president had pledged to control his ministers and to honor the agreement with Russia and the United States. Yeltsin got the message. No one in the Russian government, he declared, would challenge the negotiated agreement. Finally, Clinton told Yeltsin that “the U.S. would remain deeply and conscientiously involved in the follow-up, making sure that both of its partners’ interests were protected.”<sup>50</sup> President Clinton’s message to Yeltsin that evening was that the United States would be the honest broker in making the agreement work. In fact, the United States went far beyond that position, becoming so actively involved in developing and implementing cooperative threat reduction programs with both Ukraine and Russia that it transformed the entire region’s approach to nonproliferation and to reducing the inherited Cold War nuclear arsenals.

## Trilateral Agreement of 1994

Early in the morning of January 14, 1994, Presidents Clinton, Yeltsin, and Kravchuk signed the trilateral agreement in the Kremlin. The ceremony was brief; the

document was short, containing a statement, annex, and six secret letters.<sup>51</sup> Following the official act, President Kravchuk declared that Ukraine would accede to the NPT Treaty, thus allowing the START I Treaty to enter into force. This meant that Ukraine’s inherited strategic nuclear forces would be eliminated within the START Treaty’s seven-year limit. In his press statement, Yeltsin declared Russia would compensate Ukraine, Kazakhstan and Belarus for the value of the HEU in the nuclear warheads located on their territories. The specific amounts, usually debt relief, were later negotiated with each of these nations. In the agreement’s annex, the three presidents agreed that within 10 months, Russia would provide Ukraine with nuclear fuel assemblies containing 100 tons of low-enriched uranium, for use in its nuclear power stations. In the meantime, Ukraine would transfer at least 200 nuclear warheads to Russia for dismantlement. Russia also agreed that Ukrainian officers could monitor warhead transfer, transportation and dismantlement. The remaining warheads in Ukraine, 1,600, would be sent to Russia for reprocessing within three years. In the annex, the United States stated it would provide \$60 million to Russia to cover the initial costs of transportation and dismantlement. These commitments and actions would be accomplished in 1994. The value of the nuclear materials in the warheads was estimated at \$1 billion. In addition, Russia agreed to forgive Ukraine’s oil and gas debts of up to \$2.5 billion.<sup>52</sup>

On security guarantees, Presidents Clinton and Yeltsin declared in writing to Kravchuk that the United States and Russia were prepared to offer Ukraine security assurances. These assurances were consistent with those spelled out in the Commission for Security and Cooperation in Europe’s (CSCE) Final Act: respect for the independence and sovereignty of states, no border changes by force, no threat or use of force against the territorial integrity or political independence of any state and no use of economic coercion. If Ukraine’s parliament ratified the Nonproliferation Treaty, then U.S. and Russian leaders would reiterate their pledge not to use nuclear weapons against any non-nuclear state, including Ukraine. The two nations also pledged to seek UN Security Council action to assist Ukraine if it were attacked or threatened with nuclear weapons. Finally, President Clinton indicated that Ukraine would be invited to participate in NATO’s Partnership for Peace Program.<sup>53</sup> On financial assistance, President Clinton reaffirmed United States’ commitments to provide technical and financial assistance



William J. Clinton Presidential Library

U.S. President Clinton, Russian President Yeltsin, and Ukrainian President Kravchuk sign the Trilateral Agreement in Moscow, January 1994

for dismantling of nuclear forces and storage of fissile materials. Then, Clinton declared that under the Nunn-Lugar program, the United States had agreed to provide Russia, Ukraine, Kazakhstan and Belarus with nearly \$800 million in assistance. Ukraine, he stated, would be receiving a “minimum” of \$175 million. He committed the United States to rapid implementation of the assistance agreement.<sup>54</sup>

Once the Trilateral Agreement was signed, the Ukrainians departed quickly, and Clinton and Yeltsin turned to a lengthy discussion on NATO expansion. Clinton told Yeltsin that they had worked so diligently and successfully with Ukraine on nuclear nonproliferation, now they should now focus their efforts on security architecture for Europe.<sup>55</sup> With that, they left Ukrainian issues behind. According to Clinton’s biographer, John Harris, the president considered U.S. relations with Russia to be the most important of any nation.<sup>56</sup> The president practiced personal diplomacy with the Russian president. During his terms, from 1993 to 2001, the two leaders met 18 times, signing numerous agreements,

accords and joint statements. Nonproliferation, specifically arms control treaties and new initiatives in the Nunn-Lugar Cooperative Threat Reduction program, were part and parcel of many of their summits, international meetings and conversations.

### Immediate consequences

For General Mikhtyuk and the rocket army, the Trilateral Agreement changed everything. Less than a week had passed when General Vitaly Radetskyi, Ukraine’s new Minister of Defense, summoned Mikhtyuk and two of his senior generals to Kiev. Without warning, General Radetskyi told them they had 15 minutes to decide whether to take Ukraine’s oath of allegiance. General Mikhtyuk and one general took the oath, while the other refused. Then, the minister ordered the commanding general to return to his headquarters in Vinnitsa immediately, and convene all of his subordinate commanders. He did so, explaining his personal decision to

remain in Ukraine, and asking each officer to take or reject the oath. "All of my deputies," Mikhtyuk recalled, "except one, said they would not take the oath and asked me to transfer them to the Russian Federation for further military service in the Strategic Rocket Forces."<sup>57</sup> The general then traveled by car, stopping at the two rocket division headquarters. He convened all the officers and men. Again, he explained the new situation and gave them the choice of taking the oath. Within a week, 900 officers, approximately 40 percent of the total, opted to leave Ukraine and instead go to Russia to serve in the Strategic Rocket Forces in Russia.<sup>58</sup> This act of taking the oath was one of the final steps in nationalizing the 43<sup>rd</sup> Rocket Army and bringing it under control of Ukraine's Minister of Defense.

General Mikhtyuk accepted each officer's decision, asking only that the officers choosing to transfer to Russia remain on duty with the rocket army until an orderly process could be established. The next day, he discussed the sudden requirement to take the oath and the scope of the officer's transfer requests with Colonel General Sergeev, commander of Russia's Strategic Rocket Forces. They agreed the transfers would take place over many months, without demotions, loss of pay or loss of housing privileges. "Those officers," Mikhtyuk recalled, "who did not want to take the oath patiently waited for their transfer, and carried out their duties carefully."<sup>59</sup> The two generals came to an understanding that the 43<sup>rd</sup> Rocket Army's mission henceforth would be to secure the operations of its missile complexes and nuclear weapons storage depots before its decommissioning and total elimination.

These events occurred in the space of one week. The following week, President Kravchuk acted decisively and sent the Rada the Trilateral Agreement and a draft resolution, stipulating ratification, without any reservations, of the START I and NPT Treaties.<sup>60</sup> As expected, the government's decision to denuclearize the nation forced a major debate in parliament and the public. Kravchuk and his senior ministers argued the case for treaty ratification forcefully. On the issue of Ukraine's nuclear forces, the president stated that Ukrainian experts had informed him it was no longer possible to establish command, control or even to maintain the strategic rocket army. The missiles and warheads were becoming obsolete. The service life of the SS-19 missiles would expire in 1996. Beyond that, President Kravchuk asserted that the components of the nuclear warheads, which

were accumulating in nuclear weapons storage depots, were becoming unstable and that transferring them immediately to Russia was imperative, before it became too dangerous to transport them across Ukrainian territory.<sup>61</sup>

General Radetskyi reinforced the president's arguments, stating categorically that "the danger of an explosion of radioactive materials and warheads is growing...This could lead to a catastrophe potentially bigger than Chernobyl."<sup>62</sup> Foreign Minister Zlenko argued that Ukraine had been isolated because of its unwillingness to ratify the arms control treaties and settle the nuclear question. With the Trilateral Agreement, it now had an opportunity to end this isolation and ensure that nuclear weapons would not be used militarily.

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### 43<sup>rd</sup> Rocket Army's new mission

- ★ Secure operations
  - ★ Transfer warheads
  - ★ Decommission missiles
  - ★ Total elimination of missiles and facilities
- 

Instead they would be converted into fuel rods for the nation's nuclear power plants. Minister Radetskyi reminded the deputies of the recent rise of Russian ultranationalists who wanted Ukraine to become a Russian province. Finally, the president and ministers stressed that Ukraine's national security depended on economic prosperity, which could not be achieved without foreign aid. After further debate, the Rada voted in early February to endorse the Trilateral Agreement and to ratify the START I Treaty and Lisbon Protocols without conditions. The vote on NPT narrowly failed. As a direct consequence, the START Treaty's entry into force was delayed for several months.<sup>63</sup> This delay occurred because Russia's Duma, in its ratification articles, demanded that Ukraine, Belarus and Kazakhstan grant accession to the NPT Treaty, before it would exchange the START Treaty's instruments of ratification.

Despite this delay, the Russian government moved swiftly to negotiate a series of bilateral agreements with Ukraine on removing the warheads. One week after the Rada ratified START I, Russian Ambassador-at-Large Yuri Dubinin and Ukrainian Deputy Premier Valeriy Shmarov signed

implementing agreements on the process for compensation payments and credits, the level of maintenance and security assistance during dismantling and packaging nuclear warheads, the schedule for shipment and transfer, and procedures for Ukrainian officers to monitor warhead movement, dismantlement and reprocessing.<sup>64</sup> They also agreed on procedures for notifying each nation on the schedule and actual decommissioning of the missile complexes. President Kravchuk announced that the 43<sup>rd</sup> Rocket Army had deactivated 20 SS-19 missiles and 20 SS-24s and that it would deactivate an additional 50 ICBMs by March 1994.<sup>65</sup> These Russian-Ukrainian agreements and presidential announcements had direct consequences for the 43<sup>rd</sup> Rocket Army. For the remainder of its existence, its mission would be to maintain some SS-24s on operational alert, continue the process of warhead deactivation and removal from the missiles, support transfer of the warheads and nuclear materials from the army's storage depots to Russian military commands, continue deactivating SS-19 and SS-24 strategic missiles, and complete the officer transfers.

Three weeks after the Trilateral Agreement, Russian nuclear officers and technicians arrived at the rocket army's nuclear weapons storage depots in Pervomaysk and Khmelnytsky. General Mikhtyuk stood ready to cooperate. As a senior rocket army commander he knew and had worked with Colonel General Maslin, Chief of the 12<sup>th</sup> Main Directorate, Russian General Staff. They had discussed technical issues and procedures for removing warheads from the missiles. "We had worked closely together," Mikhtyuk recalled, "We removed and prepared [warheads] for transportation: Maslin supplied the transport."<sup>66</sup> Responsibility for planning and implementing safety and security procedures in the transfer of nuclear warheads from the rocket army and the heavy bomber air army fell to the Russian General Staff. However, mission responsibility in Ukraine rested not with General Mikhtyuk but with the Strategic Nuclear Forces Administrative Control Center in Kiev.<sup>67</sup> This center, led at first Lieutenant General A.L. Kryzko, had negotiated Nunn-Lugar CTR implementing agreements with American and Russian officials. In the first week of February 1994, the Minister of Defense selected Colonel Aleksandr I. Serdyuk, an experienced, senior nuclear weapons officer to be the center's new commander. Under Colonel Serdyuk, the center worked closely in the next few months with Major General Trofimov, a senior

officer in the Russian General Staff's 12<sup>th</sup> Main Directorate, in developing an intergovernmental agreement defining all activities associated with warhead dismantlement, packaging, transport and transfer.<sup>68</sup>

At the end of February, six weeks after the Trilateral Agreement was signed the first Russian military train, commanded by officers from the 12<sup>th</sup> Main Directorate and guarded by the Kirovograd special military brigade, left the 43<sup>rd</sup> Rocket Army's nuclear weapons storage depot in Ukraine for Russia.<sup>69</sup> Under Nunn-Lugar the United States had already delivered 4,500 armored blankets and the first of 150 super railcar containers to Russia's 12<sup>th</sup> Main Directorate. Some of this equipment was apparently used to transport warheads from Ukraine to Russia. At the end of 1994, General Mikhtyuk reported to Ukraine's president and members of National Security Council that the rocket army had shipped to Russia more than the required 200 warheads. In fact, the total number was 675.<sup>70</sup>

### American Secretary of Defense Perry comes to Pervomaysk

In the midst of this secret and sensitive operation, the Americans arrived. In late March 1994, just eight weeks after the Trilateral Agreement, U.S. Defense Secretary William F. Perry and Ashton Carter, accompanied by Defense Minister Radetskyi and senior Ukrainian government officials, flew into Pervomaysk. They went to an SS-24 missile complex where General Mikhtyuk led the American defense secretary and others down into a hardened underground missile launch control center. In a small room with targeting maps pinned on the wall, two young rocket officers briefed procedures for launching the missiles. Perry later wrote, "We watched the countdown and stared at the targets highlighted on the map – cities in Germany and England, in Kansas and Oregon." He continued, "Never had the balance of terror seemed as real and as terrible...as it was at that moment."<sup>71</sup>

That same morning, General Mikhtyuk and General Radetskyi took the Americans up to the surface where they walked across an ice-frozen knoll to a missile silo where a large, thick concrete-reinforced blast door had been raised. Perry and Carter looked down into the silo at the large SS-24 rocket. Although the nose cone with its 10 nuclear warheads had been removed, the size of the missile complex and the sight of the modern SS-24 were proof that the rocket army had

been a very formidable force. Perry, who had participated in some of the important, initial trilateral negotiating sessions in December, pledged to work closely with the Ukrainian Minister of Defense on the gradual and safe elimination of these nuclear missiles and weapons.<sup>72</sup>

That same day, Generals Radetskyi and Mikhtyuk briefed the American defense secretary on Ukraine's plans for transporting warheads to Russia and for deactivating the missiles and then destroying the missile complexes in Ukraine. In November 1993, the Ukrainian government's cabinet of ministers had approved a plan, called the Comprehensive Program, on the staged reduction of ground and air-based nuclear forces located in Ukraine. Developed by military and civilian experts from the ministries of defense, machine industry, environment, finances and the national science academy, this Comprehensive Program was the government's baseline planning document.

It had three assumptions. First, Ukraine would ratify the START Treaty and eliminate the missile and bomber complexes within seven years in accordance with the treaty's elimination protocols. These protocols were quite specific, with detailed procedures for eliminating missiles, silos, bombers and cruise missiles. Next, the government's plan anticipated consultations with the Rada and its parliamentary committees on the schedule, type and progress of the eliminations. The third assumption, which involved the United States, assumed that foreign assistance would be available to provide the means and materials to carry out the eliminations.<sup>73</sup> That was a good assumption since in October 1993, Secretary of State Christopher and Foreign Minister Zlenko had signed the U.S.-Ukraine CTR umbrella agreement, defining the categories and conditions for using \$175 million in United States dismantlement assistance.<sup>74</sup>

General Radetskyi stressed two further points. First, Ukraine would take responsibility for deactivating every missile and decommissioning every regiment and division in the rocket army. General Mikhtyuk and the 43<sup>rd</sup> Rocket Army would be responsible for decommissioning the SS-19 and SS-24 missiles, the launch complexes and facilities. Some of newest missiles, the SS-24s, would remain operational and on alert, pending a presidential decision on deactivation. The Ministry of Defense would have responsibility for scheduling and approving the actual eliminations. Radetskyi's second point was that Ukraine would liquidate the missiles, launch complexes and facilities in accordance with the START Treaty,

if the United States followed through on its commitment and sent sufficient equipment, funds, trainers and maintenance assistance.

He explained that considerable work in defining the level and kind of assistance was already done. For 14 days in late November and early December 1993, U.S. and Ukrainian delegations negotiated a series of draft agreements for implementing the \$175 million CTR umbrella agreement.



Defense Threat Reduction Agency

U.S. and Ukrainian officials at SS-19 silo, Pervomaysk, 1994

They included expansion of Ukraine's emergency response capabilities, establishment of a new national export control system, setting up a new system of government-to-government communication link for conveying data on arms control treaty compliance and on-site inspections, and development of a new national system for nuclear material controls, accounting and physical protection. For eliminating strategic nuclear missiles, they also decided on the type of equipment needed: railroad cranes, road mobile cranes, all-terrain vehicles, cutters, emergency communications

equipment, and other ancillary items, along with defining requirements for services, training and maintenance to be acquired and delivered to the Ministry of Defense. Although Ukraine's 26-man negotiating delegation consisted of the majority of military officers, there were some civilian officials from the Ministry of Foreign Affairs, Ministry of Machine Building, Ministry of Nature and the Academy of Sciences. Following two weeks of day and night negotiations, Lieutenant General Kryzko and Gloria Duffy signed the first implementing agreement on December 5, 1993.<sup>75</sup> Over the next two weeks, they signed other bilateral agreements.<sup>76</sup>

Perry and Carter, of course, knew of these earlier meetings when General Radetskyi told Perry that Ukraine would need help with a major new project of constructing and equipping a new SS-19 neutralization plant in Dnipropetrovsk. Ukraine's dismantlement plan for SS-19s stipulated that the missiles would be removed from the silo, defueled and then shipped to a temporary storage facility at Mikhaylensky. From there, toxic heptyl and amyl liquid fuels would be transported via rail several hundred kilometers to the new neutralization plant. Perry listened, indicated a willingness to discuss the project, and then said he was prepared to sign the draft implementing agreements. Then the American and Ukrainian defense ministers signed annexes to three CTR implementing agreements, one increasing funds for strategic nuclear arms elimination from \$135 to \$185 million, and two others increasing the funds by \$5 million each for the export control system and Material Protection, Controls and Accounting programs. Perry and Radetskyi then signed a new bilateral agreement on defense conversion. It stated the Department of Defense would provide up to \$40 million to Ukraine's Ministry of Machine Building to convert defense enterprises to civilian activities and convert military technologies to civilian applications.<sup>77</sup>

For Secretary Perry the most significant new CTR agreement was the one providing assistance for conversion of the military-industrial complexes. It also contained a provision that allowed Nunn-Lugar funds to be used for construction of housing for military officers and men who had been forced into retirement by the decommissioning of the rocket army. Housing for officers and their families had developed into a major political issue in Ukraine. The Rada had enacted a law, requiring that retiring military officers be provided with housing. Without it, the 43<sup>rd</sup> Rocket Army's missile bases could not be closed.<sup>78</sup> Perry recognized the

political meaning of the housing commitment and gave his word that U.S. assistance would be forthcoming.<sup>79</sup> This commitment would later be controversial, especially with some members of Congress. Nevertheless, Perry had committed the U.S. government to proceed. That same day two American defense officials, Brigadier General John C. Reppert and Paul Boren, Defense Nuclear Agency (DNA), signed a joint statement with Ukrainian Major General D.A. Rudkovskiy and Major General S.N. Malinovskiy on the terms for construction of housing units for the displaced military officers.<sup>80</sup>

### Accelerating assistance: Perry's influence

Secretary Perry did not forget these commitments when he left Pervomaysk. Under his leadership, CTR became the largest and most effective program in achieving the U.S. government's nonproliferation objectives. Perry was trained as a mathematician and had extensive business experience in electronics before serving in the department as an undersecretary for research and development programs in the Carter administration. In the 1980s he was managing director of an investment firm, and then joined Stanford University as a professor of engineering and director of the university's Center for International Security and Arms Control. He followed closely nuclear weapons developments and international negotiations on U.S.-USSR nuclear arms control treaties and agreements. Perry knew Senator Sam Nunn, chairman of the Senate Armed Services Committee, and had served on commissions with him. He participated in early meetings that had developed the initial Nunn-Lugar legislation and he strongly endorsed the concept. His experience taught him that deconstructing the huge Cold War arsenals safely and securely would require personal intervention with foreign defense leaders. It would also require multi-year financing, intensive program management, and the responsibility to carry through on multiple international projects securing warheads and eliminating weapons systems.<sup>81</sup>

In the Clinton Administration, Perry emerged as the leader in nonproliferation initiatives and U.S. engagement with Russia, Ukraine, Kazakhstan and later, North Korea. In speeches, articles and congressional testimony, Perry advocated a new strategy for the post-Cold War era, which he called preventive defense. Perry wrote "Preventive

defense is a strategy for influencing the rest of the world, not compelling it."<sup>82</sup> He implemented this strategy in practical ways: through Cooperative Threat Reduction programs with Russia, Ukraine, Belarus and Kazakhstan; in new programs in the Defense Department's global counter-proliferation effort; in new exercises with military forces in NATO's Partnership for Peace alliance; and in expanding NATO membership to include Central European nations. In all these efforts, Perry stressed diplomacy and international cooperation.<sup>83</sup>

In 1993, when he served as the deputy, Perry set in motion a major reform of the department's unfocused way of handling CTR programs. Before this reform, Congress had appropriated approximately \$400 million per year in Nunn-Lugar funds to the Defense Department. The State Department had appointed an ambassador to negotiate and sign bilateral umbrella agreements, which designated specific program areas for Nunn-Lugar funds. Senior officials at the National Security Council directed all U.S. negotiations, using diplomatic instructions. Negotiations usually concluded with signed agreements on specific assistance projects between the foreign nation and one of three U.S.

government departments: Defense, State or Energy. Defense officials emphasized those agreements leading to cooperative denuclearization projects. State pushed for nonproliferation projects, such as the science and technology centers and development of the fissile material storage facility in central Russia. The Department of Energy sought out programs that would develop fissile materials control, accounting, and physical security systems. Once the umbrella and implementing agreements were negotiated and signed, DOD sent Nunn-Lugar funds to other departments for their projects. Perry objected to this arrangement.<sup>84</sup>

His first action was to strengthen the department's CTR policy and program management teams. He assigned Ashton Carter as the lead official in developing CTR policy. Carter's office certified what programs and projects would be negotiated; it notified Congress of specific projects; and with State Department in the lead, it negotiated bilateral umbrella and implementing agreements with foreign governments. Carter's staff also prepared and testified to Congress on the department's CTR budget request. Four senior defense officials worked closely with Carter. Gloria Duffy was the



William Perry and Ashton Carter

Department of Defense



General Mikhtyuk greets Harold P. Smith, Jr.

Special Coordinator for CTR and Deputy Head of the Safe and Secure Dismantlement Talks. Elizabeth Sherwood served as Deputy Assistant Secretary of Defense for Russia, Ukraine and Eurasia. Susan Koch was the Deputy Assistant Secretary for Threat Reduction Policy, and Laura Holgate, who had worked with Carter at Harvard University, now served as a special assistant responsible for tracking numerous initiatives, including improving relations with Congress. In formulating policy, these defense officials coordinated with Rose Gottemoeller, NSC Director of Russia, Ukraine and Eurasia, who chaired the interagency working group for the Nunn-Lugar Program. In the second half of 1993, the team negotiated and signed 25 bilateral CTR agreements with Russia, Belarus, Ukraine and Kazakhstan. Testifying before Congress, Carter called it the “year of negotiations.” He predicted that 1994 would become the “year of implementation.”<sup>85</sup>

Responsibility for implementation fell to Harold P. Smith, Jr., Assistant to the Secretary of Defense for Atomic Energy. Smith was a nuclear engineer, and founder and president of a defense consulting company. He was a professor of engineering at the University of California. He knew Perry well. The scope of his responsibilities was much broader than his title suggested. He was also responsible for planning, modernization, security and survivability of the U.S. nuclear stockpile, chemical and biological defense, chemical weapons destruction, arms control treaty execution and compliance, and implementation of the CTR Program.<sup>86</sup>

Two defense agencies reported to his office directly: Defense Nuclear Agency (DNA) and the On-Site Inspection Agency (OSIA). Both agencies had a role implementing the CTR programs. “Perry made it vividly clear to me when I was sworn into office in June 1993,” Smith wrote, “that this [CTR] program must move, and it must move quickly.”<sup>87</sup> Perry directed Smith to set up a new CTR Program Office that would report to Ashton Carter, Assistant to the Secretary of Defense, who reported directly to the Defense Secretary and Deputy, and the Under Secretary of Defense for Acquisition and Technology. He also directed the office be staffed with experienced administrators and acquisition specialists. Established in May 1994, this new office would give Perry, Carter and Smith a single program manager responsible for implementing all the department’s CTR programs and projects.<sup>88</sup>

Smith asked U.S. Army Major General Roland Lajoie, who was about to retire after 35 years of military service, to develop the new CTR Program Office.<sup>89</sup> Lajoie had a long, productive career as an Army Soviet area specialist, serving as U.S. Defense Attaché to the Soviet Union, and directing the On-Site Inspection Agency, a new post-Cold War organization responsible for carrying out on-site inspections of recent international arms control treaties. He was fluent in Russian and French.<sup>90</sup> His new office staff included John Ruberto and experienced military officers: Colonel Jim Reid, Colonel Bill Tuttle, Lt. Colonel Robert Davies, Commander Mike Demio, and others. Their task was to work with defense ministries and military officials in Russia, Belarus, Ukraine and Kazakhstan to define their security and dismantlement requirements and determine specific tasks, costs, schedules and performance standards. Essentially, these program officials managed the Defense Department’s CTR programs and acquisition projects.<sup>91</sup>

By summer 1994, Perry had succeeded in pinning responsibility on specific people, designated offices and program managers within the Defense Department. Division of CTR responsibilities into policy and implementation worked reasonably well for the next four years.<sup>92</sup> In fall of 1998, a substantial defense reorganization folded the CTR Program Office and Defense Nuclear Agency into a new organization, the Defense Threat Reduction Agency (DTRA).<sup>93</sup> By that time there were literally dozens of major CTR projects underway. Yet within DOD, the same working division between policy and implementation remained. At

times, personal differences between policy and program officials flared up, with one side accusing the other of making commitments in the field, while the other complained of limited authority to implement a project's schedule and performance.<sup>94</sup>

Beginning in 1993, Perry began holding monthly meetings in his office to review every aspect of the Nunn-Lugar program. Ashton Carter, Harold Smith, Roland Lajoie, Jack Beard, DOD's General Counsel, and perhaps a program manager or two, participated in these gatherings that would run an hour or longer.<sup>95</sup> Smith recalls, "Bill Perry liked to work in small groups, so the main players would often assemble in his office, and we would simply give him status reports, and identify areas where we would need help."<sup>96</sup> Lajoie found that, "the Secretary was unusually interested in the CTR program, and every detail. He understood its value at the highest policy level...and he had an interest in the most detailed implementation aspects."<sup>97</sup> Lajoie had worked on contemporary arms control treaties with senior leaders in the U.S. and Soviet/Russian governments – presidents,

defense and foreign ministers, ambassadors, and senior general officers. Still, he was impressed with Perry's personal style, "He's a wonderful gentleman and a good listener and a polite and considerate individual. He would listen – honestly listen. He never dictated."<sup>98</sup> These monthly meetings were held, the secretary's extensive travel schedule permitting, for nearly four years until Perry's resignation in early 1997.<sup>99</sup>

That duration was extraordinary, but more extraordinary is what the Secretary did with the program. Perry traveled continuously, going to Russia four times a year for nearly four consecutive years. He went to Ukraine four times, and several times to Kazakhstan. He hosted the defense ministers of Russia, Ukraine and Kazakhstan in Washington at his Pentagon office, where meetings always involved one aspect or another of the Nunn-Lugar program. On trips to the region, Perry would take Carter and Smith along, with fully detailed planning sessions as they flew to Moscow, or another destination. They covered all aspects of the program and projects, and then on the return trip to Washington they would work on the implementation and policy issues that



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U.S. Secretary of Defense Perry and Russian Minister of Defense Grachev (c.) meet with troops

were in the Congress, the National Security Council and for the President. Smith remembers that traveling with Dr. Perry, "was really a tour de force."<sup>100</sup>

In Russia, Perry worked hard to establish a working relationship with Minister of Defense Pavel Grachev. He also met and discussed CTR projects with General Maslin from the 12<sup>th</sup> Main Directorate and Nikolai Shumkov, Director of the Main Administration for the Disposition of Warheads and Materials. Maslin thought that little had been done in the first two years, but "once William Perry came



U.S. Secretary of Defense Perry and Ukrainian Vice Premier Shmarov sign CTR agreement, Pervomaysk, 1995

on the scene...substantial progress was made."<sup>101</sup> There were many issues in Perry's relationship the Russian defense ministry that went beyond CTR and arms control treaties: establishing military-to-military contacts, scheduling joint military exercises, working out joint command relations with NATO over Bosnia, developing senior-level military officer seminars, and establishing good relations with defense civilians. As Lajoie pointed out, "we had to deal with Russia, because ultimately Russia would be the last remaining nuclear country."<sup>102</sup> He added, however, that if there was a priority with Secretary Perry in 1994 and 1995, it was probably assisting Belarus, Kazakhstan and Ukraine in removing their "nuclear capability."

Of the three nations, Ukraine captured and held Perry's attention the firmest. Valery Shmarov, Vice Premier of Ukraine, first met with Perry in Kiev in December 1993. Shmarov led Ukraine's negotiating team preparing the Trilateral Agreement. Perry, then Deputy Secretary of

Defense, discussed the CTR program with the Ukrainian leaders at length. Three months later, in March 1994, he returned to Ukraine as Secretary of Defense. When he and his small delegation flew to the missile complex at Pervomaysk, Shmarov remembered Perry listening carefully as Generals Radetskyi and Mikhtyuk presented the case for U.S. funding of housing construction for displaced SRF officers and their families. "That was a big problem for our county," Shmarov declared, "and we placed a great deal of emphasis on this issue, even to the U.S. Congress. Thanks to William Perry, we managed to obtain funds for the construction of residences in Khmelnytsky, Pervomaysk, and Vinnitsa."<sup>103</sup>

General Mikhtyuk, who met and escorted Secretary Perry each time he visited the rocket army, said that, "he made an impression of a highly educated, intellectual person who had been working in the sphere of nuclear technologies for years. I found him a purposeful, persistent person who was able to achieve the goals set by his [commander in] chief."<sup>104</sup> Nearly 10 years after the Trilateral Agreement was signed, Ukraine's Vice Premier Shmarov remained intensely proud of his role in solving an "enormous" problem for his nation. He acknowledged that the U.S. and Russia acted "responsibly and consistently." In a part of the world where agreements and declaratory statements by national leaders were made and abandoned quickly, the United States had delivered on what it promised. "Secretary Perry was the central figure," Shmarov thought, "and helped, as I did on my side, to see that the agreement was implemented."<sup>105</sup> Shmarov said Perry set up a direct phone line to Kiev and they discussed the status of Ukraine's dismantlement program "every day."

## Implementation: Ukrainian expectations, American realities

Ukraine counted on American assistance. Its ministries had developed the nation's Comprehensive Plan and its president, premier, vice premier, defense minister, national security council and foreign minister all expected they would be working with senior-level American officials on bilateral programs to eliminate nuclear weapons. President Kravchuk signed the Trilateral Agreement and the Rada had ratified it; both the government and parliament anticipated the American government would honor its commitments. They expected assistance with the economic, social and ecological consequences of reducing the strategic nuclear arsenal.

Finally, they expected American “presence” in Ukraine for the long term, until the last vestiges of nuclear forces were eliminated.

Secretary Perry shared Ukraine’s expectations. He pushed the department’s Nunn-Lugar CTR policy and program managers relentlessly to work with Ukrainian defense and government ministries and develop new programs and projects. In meeting after meeting, in Washington, Kiev or Pervomaysk, Perry would tell Carter, Smith, Lajoie and others to work with their Ukrainian counterparts to find solutions for practical problems due to different legal systems, different decision making processes, different ways of planning projects and even different perceptions of project completion.<sup>106</sup> As a result, in contrast to American assistance programs in Belarus or even Russia in these years, the U.S.-Ukrainian bilateral denuclearization effort developed at a dynamic pace from 1994 forward, with dozens of programs, hundreds of specific projects and thousands of pieces of American-purchased equipment sent to Ukraine. The U.S.-Ukrainian CTR program became a model for the other nations.

Implementing this complex, large-scale, multi-year U.S.-Ukrainian denuclearization program transformed the relationship between the two nations in ways not anticipated. Over time it became more business-like.<sup>107</sup> Before the Trilateral Agreement of January 1994 and the initial CTR agreements, U.S. leaders regarded Ukraine as a source of nuclear instability, and possibility a nuclear state. Then in that same year, American and Ukrainian officials turned to solving a host of practical problems: customs duties, contracts, payments, delivery schedules. They participated in dozens of meetings to review requirements, schedules, equipment, costs and performance standards. In the fall 1994, Shmarov became Ukraine’s defense minister. Shortly thereafter, a direct telephone line was installed, linking him to Secretary Perry to discuss the disarmament program.<sup>108</sup>

In Kiev, American Ambassador William Miller met every Saturday morning with Volodomir Horbulin, Secretary of Ukraine’s National Security Council. They discussed a range of topics, but most often implementation issues and problems.<sup>109</sup> General Lajoie and Assistant Secretary of Defense Smith traveled to the region frequently and talked by telephone with their counterparts in Ukraine on a regular basis. Senators Nunn and Lugar traveled to Ukraine every year,

if not more often. “They were aware of everything,” Lajoie recalled, “They were very good with our counterparts at all levels.”<sup>110</sup> When Ukrainian delegations visited Washington, the senators would meet with them, invariably discussing CTR issues, problems and ways to help their work.

These changes began just weeks after the Trilateral Agreement was signed in January 1994, when the Ukrainian Minister of Defense made an emergency request for equipment to assist in deactivating SS-19 missile complexes. The U.S. agreed to use Nunn-Lugar funds to purchase and deliver the requested cranes, all-terrain vehicles, emergency access equipment, communications equipment, truck batteries, power saws and other tools. The request also included a requirement for 2,200 tons of gasoline, diesel and hydraulic fuels. The amount of assistance, approximately \$750,000 was not large, but it was done quickly.<sup>111</sup> At Ambassador Miller’s suggestion, many of these items were purchased directly from the Ukrainian economy, creating a small infusion of U.S. dollars. In March, Secretary Perry and a small delegation flew to Pervomaysk for a meeting with Defense Minister Radetskyi and Vice Premier Shmarov. There Perry announced the U.S.-Ukraine’s Strategic Nuclear Arms Elimination (SNAE) implementing agreement would be increased by \$50 million.<sup>112</sup> That money, Perry noted, could be used to dismantle the SS-24 missile complexes. The Ukrainian government did not decide to eliminate the SS-24 missiles in 1994. Instead they chose to withhold the deactivation decision until they could gauge Russian and American commitment.

At the same Pervomaysk meeting, Perry announced the commitment of \$20 million in Nunn-Lugar funds for military officer housing construction projects. In March 1994, the 43<sup>rd</sup> Rocket Army had 18 operational regiments, manned by approximately 6,000 officers and warrant officers. By Ukrainian law, these officers would be retired with dismantlement of the rocket army. The Ukrainian government stated it would only be able to provide housing for 3,500 officers, which left 2,500 officers without housing. Perry wanted to integrate this requirement for officer housing into the plan to assist local industries in Ukraine, and the other nations as well, with “seed” money to convert their defense industries into commercial ventures. Perry said it was part of a new “defense conversion” program and he signed an agreement in Pervomaysk designating up to \$40 million for projects in Ukraine.<sup>113</sup>



Defense Threat Reduction Agency

New houses at Pervomaysk military base



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U.S. Secretary of Defense Perry dedicates new apartments at Pervomaysk

In June 1994, the Defense Nuclear Agency awarded a \$10 million contract to Bill Harbert International, a U.S. manufacturer of prefabricated homes throughout the world. In turn, Harbert moved quickly and contracted with the Ukrainian firm, Fregat, a former defense industrial company that had manufactured Soviet naval ship components in Pervomaysk, home of the 46<sup>th</sup> Rocket Division. Working together, they used the Ukrainian company's factory to build 300 prefabricated homes.<sup>114</sup> In September, the CTR program manager awarded a \$16 million contract to another two American firms, ABB SUSA and American Service, Inc., and two Ukrainian defense firms, Montazhnik and the Central Design Institute. The Ukrainian firms had formerly designed and constructed ballistic missile silos and command and control structures. The contract stipulated the design and construction of an apartment complex, with 195 apartments for rocket army officers and their families in Khmelniysky, home station of the 19<sup>th</sup> Rocket Division.<sup>115</sup> Satisfied with the way these projects had developed, Secretary Perry observed, "we are building more than a few houses in Ukraine, we are building a housing industry."<sup>116</sup>

## **Strategic Nuclear Arms Elimination: First projects, first equipment**

During 1994 U.S. assistance to Ukraine for strategic nuclear arms elimination emerged as that nation's largest single area of cooperation. In February, following the Ukrainian emergency request, Nunn-Lugar program managers had purchased "emergency" equipment, supplies and fuels to assist Ukrainian technicians removing and preparing SS-19 warheads for transport. The new cranes and safety equipment were used in lifting the SS-19 missiles from their silos. Although the 43<sup>rd</sup> Rocket Army had maintenance equipment such as road mobile cranes, specialized warhead vans and communications equipment, the new U.S.-provided equipment, once it began to arrive in Ukraine in the late summer and fall months, accelerated the dismantlement process.

Once the SS-19 missiles had been lifted out of their silos and defueled, the Ukrainians requested the United States purchase storage tanks to store the fuels. A Ukrainian firm, Ivano-Frankovsk based in Kharkiv, received a contract in September to manufacture and deliver 60 storage tanks.<sup>117</sup> Once finished, these storage tanks went via rail across Ukraine to a new U.S.-funded rocket fuel storage facility being

constructed at Shevchenko. During the SS-19 dismantlement process, Ukraine's Ministry of Defense worked closely with the Russian General Staff and nuclear experts to package and transport the nuclear warheads being sent to Russia. In return, the Russian government sent reprocessed nuclear fuel rods to Ukraine. The complex unfolding of the three nations' commitments were observed with great interest by the governments in Kiev, Moscow and Washington.

In April the Defense Department's CTR program awarded a contract to two Ukrainian enterprises, K.B. Yuzhnoe and Yuzhmash, for design of a new SS-19 missile neutralization facility at Dnipropetrovs'k, a city with numerous military-industrial factories and industrial plants. Since the Soviet Union had concentrated all neutralization facilities on Russian territory, Ukraine had to build such a facility to be able to finish the SS-19 dismantlement process. Defueling an SS-19 left the skin of the missile permeated with toxic heptyl and amyl fuels. A high-pressure steam process separated the fuels from the metal, so the rockets could be disassembled by cutting and shredding. In the process, valuable metals, gold, silver, platinum, which were embedded in the rocket skin, would be separated and distilled out. The Ukrainian firms also designed a missile storage yard, with an overhead bridge crane for lifting missiles from railcars to the storage yard. In September 1994, Morris-Knudson, a large U.S. construction and engineering firm, received a \$27-million contract to build and equip neutralization and missile disassembly facilities in Dnipropetrovs'k. Work at the site began in January 1995, and it was completed in 18 months. In July 1996, the new facilities were commissioned and began operation.<sup>118</sup>

With these projects underway, Ukrainian delegations regularly traveled from Kiev to Washington to meet with American CTR program managers. In long, tedious meetings they tried to define their requirements for American equipment to be purchased and shipped to Ukraine. John Connell, a DNA program manager for the strategic nuclear elimination programs in Ukraine, called this early phase the "catalogue book" approach. The Ukrainians would bring a catalogue book or a picture of all kinds of equipment items, specifically, a bulldozer, railroad cranes, intermodal rail containers, industrial incinerators or some other specialized equipment. At the DNA acquisition and technical specialists would take the picture and develop performance specifications. Connell remembers the entire negotiating process was painful, for both sides:

“The first time I met a Ukrainian, it was at DNA headquarters. There was a general, a lieutenant colonel and some civilians. They were in a room negotiating. We were trying to find out how many drill bits they wanted and what size. Were they metric, or what...they had no clue. They had no way to specify them. Our technical people were trying to nail them down very specifically, so we would know what to buy. It was very frustrating for me to witness...I was very uncomfortable with what was taking place.”<sup>119</sup>

Yet, CTR officials had to define technical requirements and specifications precisely because under Congressional legislation all these items had to be purchased in open competition. There was sufficient money, since \$55 million had been obligated for acquiring and shipping the equipment to Ukraine.<sup>120</sup>

In 1994 program managers in Washington saw CTR as an equipment-driven program. Working with acquisition

specialists, managers sought to acquire equipment through a series of steps: negotiating requirements with their national counterparts, issuing acquisition statements, notifying Congress, advertising the specific requirements for equipment in open bidding, evaluating competitive bids, and then awarding a contract. Next, they would accept delivery, and arrange for transoceanic shipment to Ukraine, Russia or the other nations. The acquisition process was lengthy and filled with obstacles. Senior officials became frustrated at the slow pace. Ashton Carter wrote, “The Pentagon acquisition bureaucracy is justly fabled for its ponderous procedures, endless paperwork, and slow workings.”<sup>121</sup> Now that system was being asked to acquire and send heavy equipment to nations, which only a few years earlier, had been enemies of the United States. Carter believed the situation called for a more rapid response on the part of the department’s bureaucracy, and he became a strong supporter of the new CTR program office.

Early in 1994, Connell was selected as chief of the Strategic Nuclear Arms Elimination Division at the



Defense Threat Reduction Agency

SS-19 missile stages in deconstruction facility at Dnepropetrovsk

Defense Nuclear Agency.<sup>122</sup> His division was responsible for implementing the strategic dismantlement and elimination program in Ukraine, Kazakhstan and Belarus. He played a pivotal role in transforming the U.S. CTR program in Ukraine. He began by changing the approach. "All the negotiating methods available," he said, "were Cold War negotiating techniques, developed when we were dealing with the Soviet Union – sit in the middle of the table, pass notes to each other, only one person talks at a time and all the rules of formal negotiation."<sup>123</sup> Instead, it occurred to him as he sat in one meeting after another, that he was the program manager for a large foreign assistance effort in which the key word was "cooperative."

Consequently, Connell developed a different approach in joint meetings with Ukrainians. He would concentrate on solving problems and not on winning negotiating points. "Sometimes I had to look across the table at the individual I was talking to and say [to myself]: Now this individual is a general, a colonel or a civilian of high rank. I don't understand what he wants, but I have to assume he is an intelligent person." He would rephrase the question, or ask it differently. At times, he admitted "my first assumption would be that this is an unreasonable request. This is just out of the ball park. We can't talk anymore."<sup>124</sup> Then, he would remind himself of his new mantra of seeing the issue as one of many in a problem solving meeting with reasonable people who had national interests, national limitations, and national problems. He would search for an area where they could work together. In 1994 and 1995, Connell traveled to Ukraine frequently, leading U.S. government and contractor groups, meeting with Ambassador Miller, monitoring the arrival and condition of U.S. CTR equipment, arranging with U.S. Embassy officials for payment of local contracts, setting up equipment training courses, approving maintenance schedules and participating with defense and rocket army officers on source selection panels.

### CTR perceptions, problems and solutions

By the fall of 1994, the rapid expansion of CTR programs had caused major problems for the staff at the U.S. Embassy. A small office was devoted to arms control treaty issues, however it had become overwhelmed with the CTR administrative work: preparing cables, translating documents for delivery to Ukrainian ministry offices, scheduling and participating



Colonel Nikolai Denysyuk and John Connell

in meetings, making payments for delivered goods, and meeting equipment shipments at Ukrainian points of entry. Established in 1992 to coordinate communications between nations on arms control treaties and to assist and monitor inspection team arrivals and departures, now three years later it was being asked to handle a significant increase in work load, virtually all due to CTR. In May, Connell met with the embassy's deputy chief of mission, the political-military officer, and the arms control representative to discuss future staffing requirements of the CTR program. During that meeting, Connell promised he would recommend that DOD augment the staff at the embassy.<sup>125</sup> Another difficulty arose when American equipment arrived at Ukrainian ports and road entry points at odd times. No American officials were there to meet the shipment or sign for it. As a consequence, the American equipment would sit for weeks, even months in the Crimean port, awaiting customs clearance. There were also problems with maintaining the few items of equipment that had already arrived and been delivered to the Ministry of Defense. The U.S. had committed to Ukraine that it would maintain equipment for up to three years, but there were no mechanisms to do the work, beyond having each American equipment supplier maintain each item. A perception grew that there was a lack of control and coordination in implementation of CTR programs in Ukraine.

These were serious issues. In late October, John Connell and a 10-person American delegation arrived in Kiev for four days of meetings with Colonel Serdyuk, chief of the Strategic Nuclear Forces Administrative Control Center, and senior Ukrainian military officials on implementation issues.<sup>126</sup> The Ukrainians wanted a schedule of delivery on ordered American equipment and better information on

logistics, specifically regarding regular maintenance. Connell agreed to their requests. They wanted a list of recent, specific equipment ordered by Defense Nuclear Agency acquisition specialists in Washington. Connell agreed. They requested data on the actual cost of the equipment. In this instance Connell refused, saying that figure would remain with the American government. Finally, Colonel Serdyuk and his delegation asked for construction of a new warehouse and equipment yard at the large military depot at Uman in central Ukraine. Connell saw merit in combining Ukraine's request



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Gloria C. Duffy

for a new warehouse and equipment yard with the U.S. need for a firm to meet shipments at Ukrainian points of entry, to clear customs, and then arrange for transport to Uman. That same firm could also be contracted to provide maintenance for all the large equipment items being sent out and used in missile fields. This discussion would lead to a CTR logistics support contract, which became one of the most enduring aspects of CTR assistance for the next 12 to 15 years. At the time Connell deferred the decision on this issue until the next joint meeting, slated for Washington in early December.

The week before the meeting, Gloria Duffy flew to Kiev to brief the president, premier, foreign minister, senior military officials and Rada committees on CTR assistance to Ukraine. Then Deputy Assistant Secretary of Defense and Special Coordinator for Cooperative Threat Reduction in the Office of the Secretary of Defense, she found that Ukrainian expectations had turned cynical. Valery Shmarov, who had become Ukraine's Defense Minister, publicly declared the United States had not provided the disarmament assistance it promised to Ukraine.

"This assistance," Shmarov said, "is totally unsatisfactory – it practically has not started. Ukraine is paying for the [dismantlement] process almost entirely out of its own budget."<sup>127</sup> According to their calculations, Shmarov said Ukraine had only received \$4 to \$5 million in equipment from the United States. Economic conditions in Ukraine had continued to deteriorate. The week Duffy arrived to brief President Kuchma, the exchange rate at the U.S. Embassy was 96,000 Ukrainian hryvnia to one U.S. dollar. The street rate was even higher at 104,000 Ukrainian hryvnia to the U.S. dollar.<sup>128</sup> Against this backdrop, Duffy tried to smooth ruffled feelings and she reported that DOD had obligated more than \$100 million to Ukraine for specific CTR equipment, training and services. While only a small portion, approximately \$4 million, had been spent on equipment and services in Ukraine during 1994, she assured the president and other government officials the aid would be forthcoming. Duffy explained the current CTR project categories and funds obligated for Ukraine:<sup>129</sup>

- Export Controls: \$7.26 million
- Government-to-Government Communications: \$2.4 million
- Emergency Response Equipment: \$5 million
- Defense and Military Contacts: \$3.9 million
- MC & A and Physical Protection: \$12 million
- Science and Technology Center: \$10 million
- Strategic Nuclear Arms Elimination: \$185 million
- Industrial Partnerships: \$40 million

While virtually all this money was in the form of promises, the list indicated that, in contrast to American CTR assistance planned for Belarus and Russia, in Ukraine the projects and assistance would be focused on strategic nuclear arms

elimination (\$185 million) and industrial partnerships (\$40 million). Both categories showed Secretary Perry's influence.

## A new direction: American integrating contractor

In November Ukrainian Defense Minister Shmarov flew to Washington for consultations with Secretary Perry. The situation in Ukraine was changing rapidly. On November 15, diplomats from 14 nations and the European Union met in Kiev and pledged to provide Ukraine with \$234 million in additional disarmament assistance.<sup>130</sup> The following day, the Rada voted to ratify the Nonproliferation Treaty by a margin of 301 to 1.<sup>131</sup> Ratification was contingent upon the five nuclear power states – United States, Russia, Great Britain, France and China providing Ukraine with written security guarantees.<sup>132</sup> Those guarantees were forthcoming. The Rada's NPT Treaty ratification meant that Russia would lift its objections and the START Treaty signatories would exchange instruments of ratification within weeks, and the treaty would enter into force. Five nations were signatories to the START I Treaty: United States, Russia, Ukraine, Kazakhstan and Belarus. Once the treaty entered into force, each nation had to meet all quotas for eliminating weapons and delivery systems within seven years.

At the Pentagon, Shmarov explained to Perry that Ukraine was not financially capable of eliminating the missiles and bombers under the START Treaty without additional American assistance. Secretary Perry, aware of the many difficulties in acquiring and delivering CTR-purchased equipment to Ukraine, suggested that the two nations might consider using large American firms, experienced in carrying out large-scale, complex construction projects, as "integrating" contractors for required START Treaty elimination work in Ukraine. That way, elimination work could be organized and managed on a larger scale and completed within the treaty's technical requirements and phased deadlines. Shmarov agreed, insisting that Ukrainian firms be employed as subcontractors and that the scope of the work be determined by the Rada and National Security Council of Ukraine. At that time, work entailed deactivating and eliminating SS-19 missile complexes. Perry listened, and then suggested that together they move forward to define the scope of work.<sup>133</sup>

Shmarov and Perry authorized their respective delegations to meet in Washington in early December to work on all

aspects of the "integrating" contractor concept. Colonel Serdyuk led a large Ukrainian military delegation consisting of generals, colonels, lieutenant colonels and civilians. Duffy led the American team, which included General Lajoie, John Roberto, Colonel Jim Reid, John Connell and others. The Ukrainian delegation began with a set of principles that would define the scope of work as articulated by Defense Minister Shmarov to Secretary Perry. The Ukrainians proposed that the U.S. finance an integrating contractor who would organize and manage the complete elimination of 13 SS-19 regiments, including 130 SS-19 missiles, 130 fixed missile silos, 13 unified command posts and associated infrastructure, within seven years. A second principle was that all elimination work involving secret equipment or secret missile configurations at the missile complexes would be carried out by subcontracted Ukrainian firms, with qualified

- 
- ★ Integrating Contractor
  - ★ U.S. - Ukraine Agreement
  - ★ Ukraine's Comprehensive Plan
- 

technicians and specialized equipment. The U.S. would pay for this work. In turn, the American delegation asked about Ukrainian plans for deactivating and dismantling the SS-24 missiles, silos and unified command posts. Colonel Serdyuk deferred discussing the future of the SS-24 missiles, citing forthcoming decisions by the president, National Security Council, and the Rada.<sup>134</sup>

Two weeks of discussions led to signing of a joint statement of the principles that would guide selection of an integrating contractor. The selection would be done cooperatively and jointly, with source selection committees for both the American integrating contractor and Ukrainian subcontractors. Colonel Serdyuk and the Ukrainians claimed the scope of the dismantlement work was so large that the American integrating contractor should be required to work with Ukrainian firms. The U.S. delegation agreed this request would be incorporated into a statement of principles and included in the request for proposals statement. The Ukrainians insisted the integrating contractor abide by national ecological protection laws during the elimination work. The U.S. side said the integrating contractor would

## With Courage and Persistence

be under control of the U.S. government but that the firm selected would follow Ukraine's Comprehensive Plan and would be required to meet all schedules and elimination protocols in the START Treaty. The two sides agreed in the joint statement to institute a selection process that would identify and select the American integrating contractor and key Ukrainian subcontractors by July 1, 1995.<sup>135</sup>

For the United States and Ukraine, this decision to turn to an "integrating" contractor became one of the most significant developments in the entire CTR assistance program to eliminate strategic nuclear missiles and bombers. The experienced American firms who would be bidding for this contract would be capable of working with obscure U.S. government acquisition, contracting, and accounting laws and regulations. They knew how to work with national and local laws abroad. Additionally, they had experience hiring and working with local firms and citizens. Given the

direction from Secretary Perry and Minister Shmarov and the consensus within the defense ministries, the two groups agreed to establish a working group of technical experts who would develop a statement of work for an integrating contractor. They also agreed to develop a joint plan for advertising the work to American contractors and coordinate schedules for identifying, evaluating and then selecting a contractor. Finally, they set the final week of January for joint technical teams to travel to Ukraine and tour an SS-19 missile silo, command post and a training command post to determine the scope of work, develop technical documents, and coordinate tasks. Throughout 1995, John Connell would lead the complex multinational source selection process.

As these developments unfolded in spring 1995, Ukraine's Minister of Defense Shmarov announced that two additional SS-19 missile complexes, with 40 ICBMs, and 40 silos would be removed from military alert status.



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U.S. Secretary of Defense Perry and Ukrainian Vice Premier Shmarov at Pervomaysk, April 1995

Dismantlement teams from the 43<sup>rd</sup> Rocket Army removed missiles from the silos and extracted 2,753 tons of oxidant and 1,129 tons of heptyl and amyl from the missiles. These toxic fuels were transported to storage sites and placed into the new storage tanks. During the year, 43<sup>rd</sup> Rocket Army specialists prepared and sent 420 nuclear warheads to Russia. The Ukrainian government paid the salaries of the rocket army's personnel and funded all these dismantlement activities.<sup>136</sup>

## **Perry's second visit to Pervomaysk**

On April 1, 1995, Secretary Perry and a small American delegation arrived in Pervomaysk to witness elimination of an SS-19 missile and meet with Defense Minister Shmarov, Colonel Serdyuk and General Mikhtyuk. Accompanying Perry were Carter and Smith. The two delegations watched as General Mikhtyuk commanded army specialists to lift the large SS-19 missile out of its silo and place it on a missile transporter vehicle in preparation for defueling into large steel defueling tanks. The tanks were manufactured by a Ukrainian firm under a U.S. CTR contract. Once in the tanks, the toxic fuels would be transported in Ukrainian military vehicles to a special rail facility, constructed and equipped with Nunn-Lugar funding. On that cold, crisp day, as they stood in front of the SS-19 missile, everyone recognized it would be a long, arduous process of working together to eliminate all of the 43<sup>rd</sup> Rocket Army's strategic weapons systems.<sup>137</sup>

In brief remarks, Perry acknowledged the progress made by the two countries. Already an American firm, Morris-Knudson, was working at Dnipropetrovs'k to build an SS-19 neutralization facility and storage yard. Two Ukrainian enterprises, K.B Yuzhnoe and Yuzhmash, designed the new neutralization facility. Already a Ukrainian firm, Ivano-Frankovsk, was building and delivering steel storage tanks to Pervomaysk and Khmel'nitsky, headquarters of the army's rocket divisions, for defueling the SS-19 missiles. By now American cranes, plasma cutters, excavators, tools, and other materials were arriving in Ukrainian ports and being shipped to the military depot in Uman. At this time an American contractor, Hughes Technical Services Company, set up offices in Uman. Its job was to provide consolidated logistics support for all the American CTR-purchased equipment arriving in Ukraine. Within the

past four months, the two nations' defense ministers and ministries had agreed on a major new initiative to hire an American integrating contractor, one with responsibility for organizing and managing elimination of Ukraine's entire SS-19 missile force.

Secretary Perry reserved his highest praise that day at Pervomaysk for two U.S.-Ukrainian firms that were building prefabricated housing for the 43<sup>rd</sup> Rocket Army personnel. The Ukrainian firm, Fregat, now worked with Bill Harbert Inc. to build homes in Pervomaysk for retiring Strategic Rocket Forces officers. Perry praised their work as one of the first industrial partnerships between American and Ukrainian business firms. "This program," Perry explained, "simultaneously had the effect of making possible the closing of the missile base, ending production of new weapons in the former Soviet missile factory and providing a new economic opportunity for the workers in the factory."<sup>138</sup> By singling out joint U.S.-Ukrainian business partnerships, as opposed to the number of rockets eliminated, Perry was speaking directly to the Ukrainian public, and indirectly to the American and Ukrainian CTR program managers. As the effort went forward, the Secretary wanted the program to incorporate as many Ukrainian firms as possible. Then he signed an amendment to CTR implementing agreement that included an additional \$20 million in assistance for strategic nuclear arms elimination projects in Ukraine, increasing the total U.S. commitment under the Nunn-Lugar CTR agreements to \$297 million.<sup>139</sup>

In the following years, Ukrainian defense officials expanded their requests for U.S. CTR assistance significantly to encompass new programs for eliminating SS-24 missiles and launch complexes, Tu-160 strategic bombers, Tu-95 heavy bombers, Tu-22 bombers, air-launched cruise missiles and assorted infrastructure. The high tide of all these eliminations, from 1995 to 2002, as detailed in the next section, continued to transform U.S.-Ukrainian relations.

Endnotes

- <sup>1</sup> *Arms Control Reporter*, 1993, pp. 611.B. 782-783. See also, Colonel General (retired) V.A. Mykhtyuk, Commander 43<sup>rd</sup> Rocket Army, "Report: Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," located in DTRA, Chapter 2, pp. 9-12.
- <sup>2</sup> *Arms Control Reporter*, 1993, p. 611.B. 782.
- <sup>3</sup> *Krasnaya Zvezda*, 7 April 1993 in *FBIS-SU*, 8 April 1993.
- <sup>4</sup> *Arms Control Reporter*, 1993, p. 611.B. 785.
- <sup>5</sup> Mikhtyuk, "Report: Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, p. 6.
- <sup>6</sup> *Ibid.*
- <sup>7</sup> For a description of the 43<sup>rd</sup> Rocket Army see, Martin J. DeWing, "The Ukrainian Nuclear Arsenal: Problems of Command, Control, and Maintenance," CNS Working Paper no. 3, *Monterrey Institute of International Studies*, (October 1993), pp. 1-30.
- <sup>8</sup> Mikhtyuk, "Report: Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 1, p. 29.
- <sup>9</sup> *Ibid.*, Chapter 2, p. 6.
- <sup>10</sup> Bohdan Nahaylo, "The Shaping of Ukrainian Attitudes towards Nuclear Arms," in *RFE/RL Research Report*, vol. 2, no. 8 (February 1993), pp. 21-45. Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, pp. 10-11.
- <sup>11</sup> *Arms Control Reporter*, 1993, pp. 611.B. 807-808.
- <sup>12</sup> *Arms Control Reporter*, 1993, p. 611.B. 803. Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, pp. 9-12.
- <sup>13</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, p. 6.
- <sup>14</sup> Steve Coll and R. Jeffery Smith, "Ukraine Could Seize Control over Nuclear Arms," *Washington Post*, 3 June 1993. Michael R. Gordon, "Russia faults U.S. on Shifting Ukraine's Arms," *New York Times*, 7 June 1993. See Mitchell Reiss, *Bridled Ambition: Why Countries Constrain Their Nuclear Ambitions*, (Washington, D.C.: Woodrow Wilson Center Press, 1995), pp. 104-105.
- <sup>15</sup> John W.R. Lepingwell, "Ukraine, Russia, and the Control of Nuclear Weapons," *RFE/RL Research Report*, vol. 3, no. 8 (February 1994), pp. 4-20.
- <sup>16</sup> Reiss, *Bridled Ambition*, p. 149.
- <sup>17</sup> For Kravchuk's statement see, *Budapest Pesti Hirlap*, 3 May 1993 in *FBIS-SU*, 5 May 1993. See also, *Arms Control Reporter*, 1993, p. 611.E.2.50.
- <sup>18</sup> Stephen Foye, "End of CIS Command Heralds New Russian Defense Policy," *RFE/RL Research Report*, vol. 2, no. 27 (July 1993), pp. 45-50.
- <sup>19</sup> Celestine Bohlen, "Yeltsin Promises Ukraine Security Guarantees," *New York Times*, 18 June 1993, at <http://www.nytimes.com/1993/06/18/world/yeltsin-promises-ukraine-security-guarantees.html?scp=3&sq=yeltsin&st=nyt> accessed on 13 September 2011. Also, Foye, "End of CIS Command," *RFE/RL Research Report*, pp. 45-46.
- <sup>20</sup> Foye, "End of CIS Command," *RFE/RL Research Report*, pp. 48-50.

<sup>21</sup> Chrysie Freeman and R. Jeffery Smith, "Ukrainian Premier Urges Keeping Nuclear Arms," *Washington Post*, 4 June 1993. For a discussion of the political context see, Reiss, *Bridled Ambition*, pp. 104-106.

<sup>22</sup> Reuters, 7 July 1993. Michael Dobbs, "Ukraine Claims All Nuclear Weapons on Its Territory; Parliament's Move Linked to Ratification of START Treaty, U.S. Raid on Baghdad," *Washington Post*, 3 July 1993, at [http://pqasb.pqarchiver.com/washington-post/access/72165298.html?FMT=ABS&FMTS=ABS:FT&date=Jul+3%2C+1993&author=Michael+Dobbs&pub=The+Washingtongton+Post+\(pre-1997+Fulltext\)&edition=&startpage=A.24&desc=Ukraine+Claims+All+Nuclear+Weapons+on+Its+Territory%3B+Parliament%27s+Move+Linked+to+Ratification+of+START+Treaty%2C+U.S.+Raid+on+Baghdad](http://pqasb.pqarchiver.com/washington-post/access/72165298.html?FMT=ABS&FMTS=ABS:FT&date=Jul+3%2C+1993&author=Michael+Dobbs&pub=The+Washingtongton+Post+(pre-1997+Fulltext)&edition=&startpage=A.24&desc=Ukraine+Claims+All+Nuclear+Weapons+on+Its+Territory%3B+Parliament%27s+Move+Linked+to+Ratification+of+START+Treaty%2C+U.S.+Raid+on+Baghdad) accessed on 13 September 2011.

<sup>23</sup> Lepingwell, "Negotiations over Nuclear Weapons: The Past as Prologue?" *RFE/RL Research Report*, vol. 3, no. 4 (January 1994), pp. 5-6.

<sup>24</sup> Roman Solchanyk, "The Ukrainian-Russian Summit: Problems and Prospects," *RFE/RL Research Report*, vol. 2, no. 27 (2 July 1993).

<sup>25</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, p. 7.

<sup>26</sup> *Ibid.*

<sup>27</sup> *Ibid.*

<sup>28</sup> Martin Sieff, "Russians Criticize Ukraine Handling of Nuclear Arms," *Washington Times*, 10 December 1993.

<sup>29</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, pp. 9-10.

<sup>30</sup> *Izvestiya*, 29 June 1993, in *FBIS-SU*, 29 June 1993. *Izvestiya*, 16 July 1993, in *FBIS-SU*, 16 July 1993.

<sup>31</sup> "Ukraine Dismantling Nuclear Missiles," *United Press International*, 2 August 1993.

<sup>32</sup> Paul D'Anieri, "Ukrainian Defense Policy and the Transformation of the Armed Forces," in Paul D'Anieri, Robert S. Kravchuk, and Taras Kuzio, *Politics and Society in Ukraine: Westview Series on the Post-Soviet Republics*, (Boulder: Westview Press, 1999), pp. 256-257. See also, Lesya Gak, "Denuclearization and Ukraine: Lessons for the Future," *Nonproliferation Review*, (Spring 1994), pp. 106-135.

<sup>33</sup> Kravchuk, "Economic Crisis and Reform," in Anieri, Kravchuk, and Kuzio, *Politics and Society in Ukraine*, pp. 166-205.

<sup>34</sup> Each week the SSD/CTR administrative office in the U.S. Embassy, Kiev reported on the fluctuations in the exchange rate. See *ACIU, Kiev Weekly Activities Report*, 17 December 1993.

<sup>35</sup> Interview, William G. Miller, U.S. Ambassador to Ukraine (1993-1998), with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 1 February 2006. Miller explained that in the fall 1993, many analysts in the U.S. State Department questioned Ukraine's future as a state.

<sup>36</sup> For Tarasyuk statement see, Radio Rossii (Moscow), 1 January 1993, in "START I Ratification Conditions Stated," *FBIS-SOV-93-004*, 7 January 1993.

<sup>37</sup> Michael Gordon, "U.S. Says Ukraine Has Begun Dismantling Nuclear Missiles," *New York Times*, 28 July 1993. For a discussion of

the Clinton Administration's decision to change its policy toward Ukraine see, Reiss, *Bridled Ambition*, pp. 106-107. And also, Strobe Talbott, *The Russia Hand: A Memoir of Presidential Diplomacy*, (New York: Random House, 2002), pp. 79-82.

<sup>38</sup> Reiss, *Bridled Ambition*, pp. 107-110. Gak, "Denuclearization and Ukraine," *Nonproliferation Review*, pp. 106-135.

<sup>39</sup> Nahaylo, "The Massandra Summit and Ukraine," *RFE/RL Research Report*, vol. 2, no. 37, 17 September 1993, pp. 1-6. Quote on p. 6.

<sup>40</sup> Interview, Miller, 1 February 2006.

<sup>41</sup> Yaro Bihun, "Former U.S. Ambassador William Miller reflects on his Kyiv assignment," *Ukrainian Weekly*, 29 March 1998.

<sup>42</sup> William J. Clinton, "Remarks to the 48th Session of the United Nations General Assembly in New York City," 27 September 1993, in *Public Papers of the Presidents of the United States: William J. Clinton, 1993*, vol. 2, pp. 1,612-1,618.

<sup>43</sup> James E. Goodby, *Europe Undivided: The New Logic of Peace in U.S.-Russian Relations*, (Washington, D.C.: United States Institute of Peace Press, 1998), pp. 65-91. Interview, Ambassador James Goodby, U.S. Ambassador for the Safe, Secure, and Dismantlement Talks (1993-1994), with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 March 2005.

<sup>44</sup> Reiss, *Bridled Ambition*, pp. 110-118.

<sup>45</sup> "Agreement Between the United States of America and Ukraine Concerning Assistance to Ukraine in the Elimination of Strategic Nuclear Arms, and the Prevention of the Proliferation of Weapons of Mass Destruction," Kiev, Ukraine, 25 October 1993. For context see, Goodby, "Testing the Utility of Nuclear Restraints after the Cold War," in *Europe Undivided*, pp. 65-91.

<sup>46</sup> Reiss, *Bridled Ambition*, pp. 110-115. Goodby, "Testing the Utility of Nuclear Restraints after the Cold War," in *Europe Undivided*, pp. 82-86.

<sup>47</sup> Reiss, *Bridled Ambition*, pp. 114-117. Gak, "Denuclearization and Ukraine," *Nonproliferation Review*, pp. 121-125.

<sup>48</sup> Talbott, *The Russia Hand*, p. 111.

<sup>49</sup> Talbott, *The Russia Hand*, p. 112.

<sup>50</sup> Talbott, *The Russia Hand*, p. 113.

<sup>51</sup> See "Trilateral Agreement, January 14, 1994," published in *Arms Control Reporter 1994*, pp. 611dST,194-198. For context and analysis see, Lepingwell, "The Trilateral Agreement on Nuclear Weapons," *RFE/RL Research Report*, vol. 3, no. 4 (28 January 1994), pp. 12-20.

<sup>52</sup> Goodby, "Testing the Utility of Nuclear Restraints after the Cold War," in *Europe Undivided*, pp. 86-90.

<sup>53</sup> Lepingwell, "Trilateral Agreement," *Arms Control Reporter 1994*, pp. 611dST194-198.

<sup>54</sup> *Arms Control Reporter 1994*, pp. 611dST194-197. Lepingwell, "Trilateral Agreement," *RFE/RL Research Report*, pp. 12-20.

<sup>55</sup> Talbott, *The Russia Hand*, pp.113-114.

<sup>56</sup> John F. Harris, *The Survivor: Bill Clinton in the White House*, (New York: Random House, 2005), pp. 209-211.

<sup>57</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, p. 17.

<sup>58</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, pp. 16-19.

<sup>59</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, p. 18.

<sup>60</sup> "Kravchuk submitted a Draft Resolution to RADA," 25 January 1994, in *Arms Control Reporter*, 1994, pp. 611bST1994.

<sup>61</sup> RADA drops its conditions for ratifying START," 3 February 1994, in *Arms Control Reporter*, 1994, pp. 611bST194-198.

<sup>62</sup> Ibid.

<sup>63</sup> Ibid. The Rada failed to ratify the NPT Treaty in February. It waited until November 1994, thus holding up entry into force for the START Treaty.

<sup>64</sup> "Russian and Ukraine held the first round of talks on implementing the Trilateral Agreement," pp. 8-9. February 1994, *Arms Control Reporter*, 1994, p. 611bST194-198. See also, Goodby, "Testing the Utility of Nuclear Restraints after the Cold War" in *Europe Undivided*, p. 88.

<sup>65</sup> *Arms Control Reporter*, 1994, pp. 611bST211-212.

<sup>66</sup> Interview, Colonel General Vladimir Alexeyevich Mikhtyuk, Commander 43<sup>rd</sup> Rocket Army, and Deputy Minister of Defense, Republic of Ukraine, with Joseph P. Harahan, Historian, DTRA, Vinnytsa, Ukraine, 25 February 2002.

<sup>67</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, pp. 31-32.

<sup>68</sup> Interview, Colonel Aleksandr I. Serdyuk, National Space Agency, Republic of Ukraine, with Joseph P. Harahan, Historian, DTRA, Kiev, Ukraine, 7 February 2002.

<sup>69</sup> Dunbar Lockwood, "Ukraine Begins Transfer of Strategic Nuclear Warheads," *Arms Control Today*, April 1994, p. 20. The first shipment left Ukraine for Russia on March 6th, with a second shipment of March 9th. See, Mikhtyuk, V.A., "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, pp. 31-32. Also, Interview, Serdyuk, 7 February 2002.

<sup>70</sup> Mikhtyuk, V.A., "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, p. 31.

<sup>71</sup> Ashton B. Carter and William J. Perry, *Preventive Defense: A New Security Strategy for America*, (Washington, D.C.: Brookings Institution Press, 1999), p 2.

<sup>72</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, p. 20. Dr. Perry's statement was recorded by General Mikhtyuk who participated in the briefing and tour of the SS-24 missile complex.

<sup>73</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, pp. 20-21.

<sup>74</sup> "Agreement Between the United States of America and Ukraine Concerning Assistance to Ukraine in the Elimination of Strategic Nuclear Arms, and the Prevention of the Proliferation of Weapons of Mass Destruction," Kiev, Ukraine, 25 October 1993. This was the basic umbrella agreement.

<sup>75</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of Ukraine Concerning the Provision of Material, Services, and Related Training to Ukraine in Connection with the Elimination of Strategic Nuclear

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Arms," 5 December 1993. This was the first major implementing agreement.

<sup>76</sup> See, "Agreement Between the Department of Defense of the United States of America and the Expert and Technical Committee of the Cabinet of Ministers of Ukraine Concerning the Provision of Assistance to Ukraine Related to the Establishment of an Export Control System to Prevent the Proliferation of Weapons of Mass Destruction from Ukraine," 5 December 1993. "Agreement Between the Department of Defense of the United States of America and the Ukrainian State Committee on Nuclear and Radiation Safety Concerning the Development of a State System of Control, Accounting, and Physical Protection of Nuclear Materials to Promote the Prevention of Nuclear Weapons of Proliferation from Ukraine," 18 December 1993. "Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of Ukraine Concerning the Provision to Ukraine of Emergency Response Equipment and Related Training in Connection with the Removal of the Nuclear Warheads from Ukraine for Destruction in the Course of Elimination of Strategic Nuclear Arms," 18 December 1993. "Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of Ukraine Concerning the Provision to Ukraine of Material and Services for the Establishment of a Government-to-Government Communications Link," 18 December 1993.

<sup>77</sup> DOD News Release, Office of the Assistant Secretary of Defense (Public Affairs), 21 March 1994. The new implementing agreement was: "Agreement Between the Department of Defense of the United States of America and the Ministry of Machine Building, Military-Industrial Complex and Conversion of Ukraine Concerning the Conversion of Enterprises of the Military-Industrial Complex," 21 March 1994.

<sup>78</sup> Carter and Perry, *Preventive Defense*, pp. 1-7, 76-77. Mikhtyuk, V.A., "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, pp. 21-22.

<sup>79</sup> Carter and Perry, *Preventive Defense*, p 5.

<sup>80</sup> Secretary Perry and General Radeskii signed the CTR implementing agreement, and the other officials signed a protocol on the terms of fulfillment.

<sup>81</sup> The best single brief biography was published by the OSD History Office, "Secretaries of Defense William J. Perry," at <http://osdhistory.defense.gov/SODs/perry.html> accessed on 13 September 2011.

<sup>82</sup> William J. Perry, "Preventive Defense," *Foreign Affairs* 75, no.6 (November/December 1996). See also Carter and Perry, *Preventive Defense*. In the mid-1990, Secretary Perry used another phrase, "Defense by Other Means," widely in speeches and Congressional testimony. See, Jason D. Ellis, *Defense By Other Means: The Politics of US-NIS Threat Reduction and Nuclear Security Cooperation*, (Westport: Praeger, 2001), pp. 1-23.

<sup>83</sup> Biography of William J. Perry at <http://osdhistory.defense.gov/SODs/perry.html> accessed on 29 December 2011.

<sup>84</sup> Ellis, *Defense By Other Means*, pp. 118-122.

<sup>85</sup> Testimony, Ashton Carter, Assistant Secretary of Defense for International Security Policy, U.S. Congress, House Appropriations

Committee, 103<sup>rd</sup> Congress, 2<sup>nd</sup> session, 9 March 1994. See also, Ellis, *Defense By Other Means*, p. 122.

<sup>86</sup> DoD Fact Sheet, Dr, Harold P. Smith, Jr., no date.

<sup>87</sup> Harold P. Smith, Speech, "Defense By Other Means: Status of the Nunn-Lugar Program," presented at 14<sup>th</sup> International Workshop on Global Security (Prague), 21-25 June 1997, published by Center for Strategic Research (Berlin, Germany), at [www.csd.org/index](http://www.csd.org/index) accessed 28 December 2011.

<sup>88</sup> Memorandum for Secretary of Defense, "Strengthening Cooperative Threat Reduction (CTR) Implementation, Executive Summary, 3 May 1994. Department of Defense Directive Number 5134.8, 8 June 1994, incorporating Change 1, 11 March 1996. Responsibility 3.17 of the new position was to "[m]anage execution and implementation of the Cooperative Threat Reduction assistance projects with the new independent states of the former Soviet Union." The update in 1996, designated the position as Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs (ATSD (NCB)).

<sup>89</sup> Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Assistant to the Secretary of Defense for CTR (1994-1997), with Joseph P. Harahan, Historian, DTRA, West Wilton, New Hampshire, 31 March 2004.

<sup>90</sup> DOD Fact Sheet, Major General Roland Lajoie, U.S. Army (Retired), no date.

<sup>91</sup> Interview, Jim Reid, Director, CTR Office, Office of the Secretary of Defense, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 1 May 2000. See, Interview, Lajoie, 31 March 2004.

<sup>92</sup> Ellis, *Defense By Other Means*, p. 122.

<sup>93</sup> Joseph P. Harahan and Captain Robert J. Bennett, *Creating the Defense Threat Reduction Agency* (Washington, D.C., 2002).

<sup>94</sup> Interview, Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 26 May 2000.

<sup>95</sup> Interview, Laura S.H. Holgate, Vice President for Russia and NIS Programs, Nuclear Threat Initiative, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 20 June 2002.

<sup>96</sup> Interview, Dr. Harold P. Smith, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs (1993-1998), with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 December 2001.

<sup>97</sup> Interview, Lajoie, 31 March 2004.

<sup>98</sup> Ibid.

<sup>99</sup> Like all modern defense secretaries, Perry faced a range of international crises, congressional issues, and the necessity for departmental reforms. During his three year term (1994-1997), Secretary Perry sent U.S. military forces to Bosnia, Haiti, Korea, and the Persian Gulf. He managed the post-Cold War demobilization and reduction in military bases, weapon systems, and personnel. He led the politically sensitive NATO expansion effort and gave great support to NATO's Partnership for Peace programs. Finally, Perry worked hard to find a solution to North Korea's nuclear expansion efforts. In the context of all these issues the CTR program fit into Perry's concerns about Russia and the other NIS states and President Clinton's nonproliferation objectives.

<sup>100</sup> Interview, Smith, 14 December 2001.

<sup>101</sup> Interview, Colonel General (Retired) Yevgeny P. Maslin, Director, 12th Main Directorate, Russian General Staff, Russian Armed Forces, with Joseph P. Harahan, Historian, DTRA, Moscow, Russia, 18 January 2005.

<sup>102</sup> Interview, Lajoie, 31 March 2004.

<sup>103</sup> Interview, Valery Nikolayevich Shmarov, Vice Premier of Ukraine, with Joseph P. Harahan, Historian, DTRA, Kiev, Ukraine, 6 June 2002.

<sup>104</sup> Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002", 20; Brackets added by editors.

<sup>105</sup> Interview, Shmarov, 6 June 2002.

<sup>106</sup> Interview, Holgate, 20 June 2002. Interview, Smith, 14 December 2001.

<sup>107</sup> See Kostyantyn Hryshchenko, "Reducing the Nuclear Threat through Joint Efforts," in John M. Shields and William C. Potter, eds., *Dismantling the Cold War*, pp. 151-167. Hryshchenko was the Deputy Foreign Minister of Ukraine, but during the early 1990s he had served as the Head of the Arms Control and Disarmament Directorate in the Ministry of Foreign Affairs.

<sup>108</sup> Interview, Shmarov, 6 June 2002.

<sup>109</sup> Interview, William G. Miller, U.S. Ambassador to Ukraine (1993-1998), with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 1 February 2006.

<sup>110</sup> Interview, Lajoie, 31 March 2004.

<sup>111</sup> In December 1993 during the bilateral meeting on identifying Ukrainian requirements for the CTR Implementing Agreement on Strategic Nuclear Arms Elimination, the negotiators included an annex, labeled "Emergency Support Annex." This annex listed the types of equipment, training, and technical support that the Ukrainians requested and that the U.S. Defense department officials agreed to provide. See, Annex D to the "Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of Ukraine Concerning the Provision of Material, Services, and Related Training to Ukraine in Connection with the Elimination of Strategic Nuclear Arms," 5 December 1993.

<sup>112</sup> DOD News Release, Office of the Assistant Secretary of Defense (Public Affairs), 21 March 1994. See, "Amendment to the Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of Ukraine Concerning the Provision of Material, Services, and Related Training to Ukraine in Connection with the Elimination of Strategic Nuclear Arms," 5 December 1993. This amendment was signed by William J. Perry, Secretary of Defense, and V. Radeskii, Ministry of Defense, 21 March 1994.

<sup>113</sup> The figure is contained in the agreement; see, "Agreement Between the Department of Defense of the United States of America and the Ministry of Machine Building, Military-Industrial Complex and Conversion of Ukraine Concerning the Conversion of Enterprises of the Military-Industrial Complex," 21 March 1994. For Ukrainian officer figures see, Memo, Dr. Gloria C. Duffy, Deputy Asst. Secretary of Defense and Special Coordinator for Cooperative Threat Reduction, Office of the Secretary of Defense, "Cooperative Threat Reduction Assistance provided to Ukraine," 29 March 1995.

This memo contains a summary of the CTR support to Ukraine 1993-1995.

<sup>114</sup> Letter, Dr. Gloria C. Duffy, Deputy Asst. Secretary of Defense and Special Coordinator for Cooperative Threat Reduction, Office of the Secretary of Defense, to Steve Rosenberry, CBS news, 21 April 1995, with attachments.

<sup>115</sup> DOD News Release, Office of the Assistant Secretary of Defense (Public Affairs), 14 December 1994.

<sup>116</sup> Dr. William J. Perry, Secretary of Defense, "Building Industrial Partnerships in the Former Soviet Union," Industrial College of the Armed Forces Conference Keynote Address, (Fort McNair, Washington, D.C.), 19 April 1995.

<sup>117</sup> Memo, "Cooperative Threat Reduction Assistance to Ukraine," 29 September 1994, no author or office identified.

<sup>118</sup> USIS News Release, "Construction Bureau K.B. Yuzhnoye and Yuzmash and Neutralization Facility," no date. USIA News Release, "Officials break ground for Ukrainian ICBM Neutralization Facility," 14 November 1994. For a brief program description and funding see, Memo, Dr. Gloria C. Duffy, Deputy Asst. Secretary of Defense and Special Coordinator for Cooperative Threat Reduction, Office of the Secretary of Defense, "Cooperative Threat Reduction Assistance provided to Ukraine," 29 March 1995.

<sup>119</sup> Interview, John Connell, Program Manager, Strategic Nuclear Arms Elimination, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Fort Belvoir, Virginia, 16 February 2001.

<sup>120</sup> Memo, OSD, "Cooperative Threat Reduction Assistance to Ukraine," 29 September 1994, no author or office identified.

<sup>121</sup> Carter and Perry, *Preventive Defense*, 74-75.

<sup>122</sup> Brief Resume, John C. Connell, Jr., February 2001.

<sup>123</sup> Interview, Connell, 16 February 2001.

<sup>124</sup> Ibid.

<sup>125</sup> U.S. Embassy, Kiev, ACIU, Kiev Weekly Activities Reports, 19 February, 26 February, 19 March, 26 March, 29 May 1994. These reports detail the administrative and logistical support that the officers and civilians in this small section were providing to the CTR Program.

<sup>126</sup> This account of the requests and responses is from Colonel V.N. Blidar. He was a senior colonel in the Ukrainian Ministry of Defense who worked closely with Colonel General Mikhtyuk and Colonel Serdyuk. See Mikhtyuk, V.A., Report, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002", Chapter 2, pp. 46-47.

<sup>127</sup> Press Conference, Mr. Valery Shmarov, Minister of Defense, *Reuters*, 23 September 1994.

<sup>128</sup> U.S. Embassy, Kiev, ACIU, Kiev Weekly Activities Report, 19 October 1994.

<sup>129</sup> Memo, "Cooperative Threat Reduction Assistance to Ukraine," 29 September 1994, no author or office identified.

<sup>130</sup> Ron Popeski, "West Gives Ukraine \$234 Million in New Arms Aid," *Reuters*, 11 November 1994, cited in Mark D. Skootsky, "An Annotated Chronology of Post-Soviet Nuclear Disarmament, 1991-1994," in *The Nonproliferation Review*, (Spring-Summer 1995).

<sup>131</sup> Dunbar Lockwood, "Ukraine Accedes (Finally) to NPT: Opens Way to Start Reductions," *Arms Control Today*, December 1994.

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<sup>132</sup> *Reuters*, "Russia Welcomes Ukraine Backing Pact," 16 November 1994.

<sup>133</sup> For Minister Shmarov's opinions see, David Storey, "Unhappy Ukraine Seeks More Direct U.S. Aid," *Reuters*, 16 November 1994. For an account of the Perry-Shmarov meeting see, Mykhtyuk, V.A., Report "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002", Chapter 2, Section 4. "The Integrating Contractor," pp. 33- 49.

<sup>134</sup> Mykhtyuk, V.A., Report "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002", Chapter 2, Section 4. "The Integrating Contractor," pp. 46-49.

<sup>135</sup> *Ibid.* For a flavor of these negotiations see, Interview, Connell, 16 February 2001.

<sup>136</sup> Mykhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002", Chapter 3, pp. 8-9.

<sup>137</sup> News Release, OSD Public Affairs, "U.S. Assists Ukraine with Nuclear Weapons Dismantlement," 1 April 1995. For Secretary Perry's account see, Carter and Perry, *Preventive Defense*, pp. 5-6.

<sup>138</sup> Perry, "Building Industrial Partnerships in the Former Soviet Union," pp. 21-26.

<sup>139</sup> News Release, OSD Public Affairs, "U.S. Assists Ukraine with Nuclear Weapons Dismantlement, April 1, 1995. See also, Interview, Smith, 14 December 2001.

## High Tide of Cooperation with Ukraine

### Measuring Success

Government leaders and lawmakers in Russia, Ukraine and the United States watched intently as the 43<sup>rd</sup> Rocket Army began decommissioning and dismantling its missiles. Each nation had its own scale for measuring success. Throughout the operation, Russia measured success as the ability to secure and transport the 43<sup>rd</sup> Rocket Army's nuclear warheads out of Ukraine to Russia. In the Trilateral Agreement of 1994, President Yeltsin committed his government to removing all of Ukraine's strategic nuclear warheads to Russia, dismantling them and shipping nuclear materials to the United States for reprocessing. Yeltsin then declared his government would supply Ukraine with low-enriched uranium fuel rods for use in its nuclear power plants for the next five years.<sup>1</sup> Although movement of the weapons and reprocessed fuels were shrouded in secrecy, both governments monitored operations closely. General Mikhtyuk, 43<sup>rd</sup> Rocket Army's commander, reported the nuclear warheads were shipped via military trains within two and a half years. Shipments from the rocket army's weapons depots began within weeks of signing the Trilateral Agreement and continued at a steady pace. In all, the 43<sup>rd</sup> Rocket Army shipped more than 1,326 warheads from its nuclear storage depots: 675 warheads in 1994, 477 in 1995 and 174 in 1996.<sup>2</sup> On May 31, 1996, the final train left Ukraine for Russia laden with the last of approximately 1,800 warheads, including more than 400 weapons from the 46<sup>th</sup> Bomber Army.<sup>3</sup>

Ukraine's government measured success by the arrival of trains bearing low-enriched uranium fuel rods from Russia.

Throughout the 1990s, nuclear power was a critical source of electrical power for Ukraine. Trains began arriving at the power plants in 1995. Ukraine's Soviet-era industrial base was energy intensive. The nation imported 90 percent of its oil and 80 percent of its natural gas from Russia. Ukraine paid or created debt accounts with Russian firms for these fuels. Nuclear power plants provided approximately 40 to 50 percent of Ukraine's electrical energy.<sup>4</sup> At no cost to Ukraine, Russia sent uranium fuel rods to their power plants for five years, 1995-1999. According to Volodymyr P. Horbulin, President Kuchma's senior assistant for national security, "had this [nuclear fuel rod shipments] not occurred, Ukraine would have had serious energy problems."<sup>5</sup> Every shipment was closely monitored.

Ukraine's government measured success with the United States by the degree it followed through on its commitments to provide assistance in decommissioning, dismantlement, destruction and environmental restoration of the nation's inherited strategic rocket and bomber armies, and infrastructure. It also measured success by American promises to assist Ukraine in its commitments, written into national legislation, to provide housing for retiring Strategic Rocket Forces officers and families. In perception and reality, Ukraine was a poor nation and the United States was wealthy and powerful. When American officials signed agreements and made commitments, all the implementation programs were closely monitored by Ukraine's government, military, legislature, press and the public.

The United States measured success on several scales. On the nuclear warhead scale, the U.S. had the same measuring



Coat of Arms of Ukraine



Coat of Arms of the Russian Federation



Great seal of the United States

rod as Russia and Ukraine. When the Trilateral Agreement was signed in Moscow, President Clinton told Yeltsin and Kravchuk the United States would remain “deeply and conscientiously” involved in carrying out the agreement, making sure both parties’ interests were protected.<sup>6</sup> Senior administration officials, especially Vice President Al Gore and Secretary of Defense William Perry, monitored Russian and Ukrainian commitments and obligations, and they directly managed progress in Nunn-Lugar CTR assistance programs in Ukraine.<sup>7</sup> In the assistance programs, they measured success on a scale that monitored how quickly bilateral commitments moved from policy declarations to program implementation. In 1994, Perry expanded U.S. commitments to Ukraine in two new directions. He initiated a new defense conversion program to use American funds and private contractors to assist Ukrainian defense enterprises in converting from military to commercial work. Then, he committed the Defense Department to hiring an integrating contractor to manage CTR programs that eliminated SS-19 silos, enabling Ukraine to meet its START Treaty requirements.<sup>8</sup>

Congress monitored the administration’s performance in hearings, investigations and specific inquiries. In the formative years, Congressional oversight added enormous pressures. There were strong encouragements from Senators Nunn and Lugar to make new commitments faster. These new commitments were turned into specific programs and projects by Defense Department officials in OSD International Security, OSD Nuclear and Chemical and Biological Programs, the CTR Program Office and the Defense Nuclear Agency. Their work was measured on several scales. Congressional committees used a scale that evaluated the rate of obligations

versus actual spending on projects. The assumption was that this measuring rod would drive defense officials to identify dollars against specific programs and projects. It was a budget method to see spending more clearly. The GAO, Congress’ investigative agency, used the same measurement: program obligations versus actual spending rates, as well as scales that examined specific problems, issues and outright failures. In their reports, Congressional investigators were critical of the program’s formative years, focusing on the lack of DOD management systems, inadequate long-range planning, lack of audits and examinations, and failure of the program to meet its obligation rates.<sup>9</sup> Under the law, the president had to certify to Congress that the foreign nations were reducing weapons in accordance with legislative intent. Following the 1994 elections, Congress used this legislative requirement for presidential certifications as a way to pressure the Clinton administration.<sup>10</sup>

Foreign aid was never popular with Congress. Even with the powerful patronage of Senators Nunn and Lugar, the annual CTR appropriations bill proved difficult to maneuver through both houses of Congress. From the beginning, Nunn and Lugar worked from a different scale. They measured success over a longer perspective. The senators believed the massive nuclear, chemical and biological arsenals created by the Soviet Union during the Cold War had been transformed in the 1990s into a serious new international proliferation issue, one requiring long-term cooperative programs to reduce stockpiles and secure the weapons. Speaking at an international conference on CTR in 1995, Senator Nunn explained his perspective. “This program has, I believe, helped to focus the leadership of these newly emerging countries on the key problem of weapons of mass destruction at a time

when they have had many critical things to consider, when this was only one of many urgent problems.”<sup>11</sup>

Secretary Perry measured success using a similar long-term scale. He saw the Nunn-Lugar Cooperative Threat Reduction program as a means to an end in which the United States, Russia, and other nation’s relationships could be transformed from tense, confrontational Cold War era relations, to normal state-to-state associations. Cooperative international programs that secured and reduced massive Cold War weapons arsenals, especially nuclear weapons, Perry insisted, had to become part of the department’s central mission. Accordingly, Secretary Perry’s measuring scale grew in size as he pushed his senior officers to make more commitments with the newly independent states and carry them out faster.<sup>12</sup>

## Deactivating Ukraine’s SS-19 missile forces

The first major U.S.-Ukrainian projects involved SS-19 missile forces. As early as June 1993, seven months before the Trilateral Agreement, General Mikhtyuk ordered the deactivation of two SS-19 missile regiments due to obsolete, inoperable parts.<sup>13</sup> The service life of the SS-19 missile force was limited. In Kiev, President Kravchuk set up a ministerial-level national security committee to examine all aspects of deactivating Ukraine’s strategic weapons systems. Consisting of senior officials and specialists from ministries of defense, machine industry, environment, finance, foreign affairs and the academy of science, this committee developed Ukraine’s “Comprehensive Program for the Staged Reduction and Elimination of the Ground- and Air-based Nuclear Weapons.”<sup>14</sup> Approved in November 1993 by Ukraine’s Cabinet of Ministers, it stipulated that the 43<sup>rd</sup> Rocket Army’s SS-19 missiles, fixed silos and launch control centers would be the first strategic systems to be eliminated. In every subsequent negotiation with the United States, eliminating these SS-19 missiles and systems came first. Ukraine’s government, not the United States, set the order.

General Mikhtyuk’s 43<sup>rd</sup> Rocket Army had 13 SS-19 regiments, each equipped with 10 SS-19 ICBM missiles and 10 fixed, steel-reinforced concrete silos. Code named “Stiletto,” the SS-19 was a liquid-fuel missile capable of launching six nuclear warheads, each with an explosive yield of 500 kilotons. Its range was 10,000 kilometers, bringing

it into range of most targets in the United States.<sup>15</sup> In each regiment, SS-19 missiles were deployed in fixed silos widely dispersed across the Ukrainian countryside. Each missile silo was linked by buried cables to a regimental launch control center. The launch center was buried deep underground, shielded by steel and reinforced concrete blast doors and casements. The rocket army also had two SS-19 training silos used for maintenance, security, communications and safety training. In total, the 43<sup>rd</sup> Rocket Army had 130 SS-19 missiles, 130 silos, 13 launch control centers and two training silos. General Mikhtyuk did not, indeed could not, deactivate all the rocket army’s SS-19 missiles at one time. The process of turning an operational missile complex into an inactive site was technically complex; requiring decommissioning, careful sequencing, and detailed planning of deactivation operations, specialized equipment, trained technicians and special external security measures. Decommissioning and deactivation, General Mikhtyuk decided, would proceed regiment by regiment.<sup>16</sup>

In the fall of 1993, Mikhtyuk directed the headquarters staff to draw up a comprehensive plan for eliminating the 13 SS-19 missile regiments. They developed a plan that envisioned the staged deactivation of missiles, elimination of silos, inactivation of units, social protections (housing) for officers forced into retirement, and even proposals for reusing scrap materials from the rocket army’s infrastructure. General Mikhtyuk would control the entire process. When the general submitted his plan to the Ukrainian government, it was not adopted. Instead, Ukraine’s Council of Ministers endorsed the Comprehensive Program.<sup>17</sup> Following Ukraine’s signature and ratification of the Trilateral Agreement in early 1994, the Comprehensive Program became the national plan for deactivating and eliminating the Strategic Rocket Forces. Initially, they would eliminate the 130 SS-19 missiles, and delay the decision to eliminate 46 SS-24 missiles. Then, after a presidential and parliamentary decision, the bomber army would be eliminated, and possibly the SS-24 missiles. Two organizations had primary responsibilities. In the field, Mikhtyuk’s 43<sup>rd</sup> Rocket Army would deactivate the SS-19 missile regiments, sending special technical teams to each missile complex where they would separate warheads from the missiles and prepare them for shipment. Then, they would defuel the missiles in the silos, transporting the liquid rocket fuel and missile casing to division headquarters for temporary storage. Next, rocket army specialists would

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deactivate launch control centers, and finally General Mikhtyuk would decommission the regiment and all of its assigned personnel. Working with these procedures, the commander and the rocket army essentially decommissioned and deactivated itself.<sup>18</sup>

The second organization, the Ministry of Defense's Strategic Nuclear Forces Administrative Control Center, was responsible for dealing with the Russian Ministry of Defense and the 12<sup>th</sup> Main Directorate of the General Staff on the inventory, security and transport of nuclear warheads from Ukraine to Russia. Led by Lieutenant General A. Kryzko and Colonel A.I. Serdyuk, this center dealt exclusively with U.S. CTR policy and program officials. Colonel Serdyuk and his staff drafted all Ukraine's national requirements, which were included in the bilateral U.S.-Ukraine CTR implementing agreements. Once American equipment began arriving and contracts with American companies began to be signed, the Kiev center officials served as lead-agency and program managers for Ukraine on all CTR programs and projects.

Until the Ukrainian government changed this arrangement in May 1996, U.S. CTR officials worked directly with Colonel Serdyuk and the center's officers.<sup>19</sup>

After January 1994 when the Trilateral Agreement was signed, events moved swiftly. General Mikhtyuk and his officers took the oath of allegiance to Ukraine. Minister of Defense Shmarov ordered implementation of the national schedule for eliminating all 130 SS-19 missiles, silos and launch control centers. Out in the missile fields, General Mikhtyuk directed headquarters and division planning staffs to develop a new rocket army plan "for removal of military guards duty from the silos, and from the unified command posts."<sup>20</sup> He wanted a comprehensive plan to control the deactivation process. Work would begin in late spring, following the thaw of ice and mud. "By our reckoning," the general said, "the process of removal of the military guard from one silo took eight days."<sup>21</sup>

It began when General Mikhtyuk issued three orders. First, he ordered removal of the liquid fuel components from



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Removal of SS-19 ICBM from silo



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Roland Lajoie, General Vladimir Mikhtyuk and Laura Holgate (l.-r.)

an SS-19 missile at a specific silo. That required a team of army specialists with military defueling trucks with tanks, pumps and hoses, maintenance vehicles, and fire protection units to form a truck convoy and travel out to the remote missile site. The second order directed detachment of the warhead from the missile at the silo site and transport to the rocket division's nuclear storage depots. That order required another team of specially trained rocket army and industrial technicians, equipped with special equipment and vehicles to travel by convoy to the missile site. Strategic Rocket Forces' safety technicians from the nuclear weapon's manufacturing enterprises and design offices had to take part in warhead dismantlement operations. In this phase, special security teams accompanied the team to the silo site and then provided road security as they transported the warhead and components to the missile division's nuclear weapons storage depots.

The third order required that a plan of control over dangerous operations be implemented that involved officers in the regiment, division and army. A special rescue team was formed in each missile division. Safety and security were stressed throughout all operations. General Mikhtyuk directed that the general officer in charge establish an

"everyday" plan, one with an assignment for every person taking part in the work. Before any dismantlement work could begin at any missile site, all units had to complete additional training, be certified, and plan out all issues involving interaction between specialists and the teams traveling to missile sites. A centralized work control center recorded all work at the missile sites. According to the general, "such detailed planning allowed fulfilling all of the work in strict regulated terms, and allowed us to guarantee work safety, and to exclude any accidents in the missile regiments, divisions, supply units and the army."<sup>22</sup>

At the missile complex, the eight-day sequence began with technicians removing the warhead from the SS-19 missile while it was in the silo. The second day, the missile's liquid fuel, called heptyl, was discharged from the missile tanks. During the third and fourth days, the amyl fuels were discharged. Rocket army specialists worked inside the missile silo during the next two days, removing sensitive equipment and preparing the missile for removal. On day seven, the SS-



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Removal of SS-19 ICBM from silo

19 missile was removed from the silo by specialized cranes and placed on military transport vehicles. During the eighth and final day, the remainder of fuel was removed from the missile and the missile-transporter vehicle was driven, via convoy, back to the main missile base. Once these teams finished their work at the deactivated missile site, they would move on under orders, to each of the other nine missile sites in the regiment's missile complex. Deactivation of a single regiment was labor intensive. Completing work in all 13 regiments (130 SS-19 missiles), especially in bad weather conditions, took months, even years.<sup>23</sup>

General Mikhtyuk entrusted deactivation of the SS-19 rocket forces to four deputy general officers: O. I. Bytsyuk, V.N. Bushuev, V.A. Filatov, V.N. Kobasa, and the missile division commanders, Major Generals V.V. Shvec and General A.A. Ilayshov. These general officers supervised the work of special military and technical teams carrying out SS-19 deactivation work in the missile fields during 1994-1995. In those years, they deactivated eight regiments, defueling and removing 80 SS-19 missiles from their silos. In the same period, rocket army and industrial specialists prepared for shipment to Russia more than 70 percent of the army's nuclear armaments. There were no accidents or security incidents. Work continued in 1996, 1997 and 1998, as the remaining five SS-19 missile regiments' missiles, silos, and launch control centers were deactivated and the units decommissioned. During those years, two SS-19 training silos, one in Khmelnytsky and the other in Khartiv, were deactivated. As noted, the last warhead was shipped from Ukraine to Russia May 31, 1996. Slightly more than two years later, on June 5, 1998, the last of 130 SS-19 ICBM missiles was lifted from its silo, defueled and then transported to a temporary storage facility at division headquarters.<sup>24</sup>

### U.S.-Ukraine CTR projects

Initially, General Mikhtyuk deactivated the SS-19 regiments using the 43<sup>rd</sup> Rocket Army's equipment. After all, the 43<sup>rd</sup> had been one of the largest rocket armies in the Soviet Union's Strategic Rocket Forces, with five types of ICBMs, launchers and command centers. At full strength, the army had 35,000 men and several hundred, if not thousands, of items of equipment: trucks, cranes, missile transporters, missile fuel trucks, maintenance trucks, special-warhead security transport vehicles, testing equipment, special tools

and other items of equipment. The 43<sup>rd</sup> Rocket Army had been manned and equipped to operate on continuous alert as a modern, sophisticated strategic rocket force. It was not equipped to deactivate and eliminate itself rapidly. American equipment, purchased and delivered with CTR funds, could assist General Mikhtyuk and his officers deactivating the SS-19 missile force, provided it arrived in the field and was maintained in operational order. When Ukrainian and American program managers met in Kiev for 10 days in late October 1993, they agreed on a broad array of equipment: railroad cranes, mobile cranes, all-terrain vehicles, cutters and emergency communications equipment, along with support services, training and maintenance, to be acquired and delivered to the Ukrainian Ministry of Defense and then to the 43<sup>rd</sup> Rocket Army. They also agreed on the type of equipment needed to expand Ukraine's emergency response capabilities and necessary items for developing a national system for nuclear material controls, accounting and physical protection. All these specific requirements were incorporated into the first CTR implementing agreement, signed December 5, 1993 in Kiev by Gloria Duffy and Lieutenant General A. Kryzko, Head of the Strategic Nuclear Forces Administrative Center.<sup>25</sup>

Two months later in February 1994, General Redetskiy, Ukraine's minister of defense made an emergency request to U.S. Ambassador Miller for new equipment to assist General Mikhtyuk's 43<sup>rd</sup> Rocket Army in deactivating the SS-19 missiles. U.S. officials agreed they would use Nunn-Lugar funds to purchase and deliver emergency access equipment, communications equipment, truck batteries, small cranes, power saws and other tools. They also requested 2,000 metric tons of gasoline, diesel and hydraulic fuels.<sup>26</sup> Ukraine's economy was in a desperate condition; tax revenues were so low that government ministries had little or no funding. In March 1994 when Secretary Perry visited Pervomaysk, Generals Radeskii and Mikhtyuk briefed him on the process of deactivating the SS-19 regiments. At that time, Minister Radeskii requested the U.S. purchase 60 large storage tanks for storing toxic liquid rocket fuels, heptyl and amyl. Perry agreed. Radeskii also requested the U.S. CTR program contract with an American firm to build an SS-19 neutralization plant for purging the rocket's metal skin and then shred the missiles for residual precious metals. Perry also agreed to this.<sup>27</sup>

One year later, Secretary Perry returned to Pervomaysk and the situation had changed. When General Mikhtyuk

briefed Perry's delegation on the rocket army's status, he explained they had deactivated half the SS-19 regiments, and had dismantled, packaged and shipped more than half of the army's nuclear warheads to Russia.<sup>28</sup> Defense Minister Shmarov stated Ukraine was meeting its commitments under the Trilateral Agreement, yet they were still awaiting delivery on most of the long promised American-purchased dismantlement equipment. United States CTR program managers had problems acquiring, shipping and delivering requested equipment to Ukraine. Those few items that did arrive at Ukraine's ports in the Crimea remained on the docks for weeks, months or longer. Even then, Colonel Serdyuk's staff in Kiev had problems getting American equipment approved by customs officials and local tax collectors, then delivered to the defense ministry's military equipment depot. Also, the American integrating contractor for SS-19 silo eliminations, which Perry and Shmarov had agreed to in November 1994, was still months from being selected and setting up shop. Everyone, especially the American CTR policy officials, was frustrated. Yet despite these problems, there were signs the

U.S.-Ukrainian large-scale cooperative program was about to take a decisive turn.<sup>29</sup>

By April 1995 U.S. defense officials – Ashton Carter, Gloria Duffy, Harold Smith, General Roland Lajoie, and the CTR Program Office – had reached agreement with the Ukrainian Ministry of Defense, the U.S. National Security Council and Congress on eight major projects for Ukraine. Seven of these projects would directly aid SS-19 deactivation and dismantlement operations.<sup>30</sup> They were:

- CTR heavy construction equipment for SS-19 missile-complex deactivation and nuclear warhead removal operations
- CTR logistics support for shipping, receiving, maintaining and repairing U.S. construction equipment
- CTR integrating contractor for SS-19 silo eliminations (130 silos)
- Construction and equipping of an SS-19 missile neutralization and elimination facility (130 missiles to be eliminated)



Defense Threat Reduction Agency

U.S. CTR equipment in Ukraine

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- Construction of a new SS-19 liquid propellant storage facility
- Planning, managing and eliminating SS-19 missile systems infrastructure (facilities, buildings and cables)
- Construction of SS-19 SRF officer housing (prefabricated houses and apartments)
- Planning and funding DoD-MoD defense conversion projects

*Note. Three of these projects had begun in 1994 with identification of construction equipment; selection of a CTR logistics support contractor, and selection of the American contractor for construction of the neutralization facility.*

In defining these projects, American CTR officials assumed they and the Ukrainian defense officials would be responsible for deconstructing the entire SS-19 strategic missile force. Conceptually, this was a significant change from previous years when the United States would negotiate, purchase, then deliver American equipment; or the U.S. would commit to funding renovations on a specific building. Now they accepted responsibility for planning, managing and carrying out complete destruction of the 43<sup>rd</sup> Rocket Army in Ukraine. The entire effort required a systems engineering approach, one that stressed planning, managing, implementing, and accounting for all aspects of the large-scale, multi-year, multi-million dollar program. It was never easy. Different cultures, different languages, managerial styles, and bureaucratic approaches would test all Americans and Ukrainians working on these multiple projects.

John Connell, Chief of the Strategic Nuclear Arms Elimination Division at the Defense Nuclear Agency, and his small staff were the American program managers for these SS-19 missile projects. They traveled constantly to Ukraine for meetings, negotiations and site visits. Accompanied by acquisition experts, they also went across the United States, visiting U.S. contractors, signing contracts, expediting deliveries and fixing problems. Early in the process, Connell's agency, the Defense Nuclear Agency, awarded a small contract for technical services to Science Applications International Corporation. This support group provided technical evaluators, acquisition experts, treaty specialists and administrative personnel to the CTR program's government managers in Washington. They were invaluable, often traveling with program

and project managers to sites where they supported implementation projects.

Another small but important contract in the summer of 1994 provided CTR Logistics Support (CLS). Transformation of the American effort in Ukraine from an equipment-provided operation to a systems-based elimination program meant logistics would become central to the entire operation. Bob Jagger of the Hughes Technical Services Company, the CLS program manager moved quickly to set up and staff an office in Kiev, in Moscow and other capital cities. CLS workers would facilitate arrival of heavy construction equipment being shipped from the United States. Barrett Haver, a former INF Treaty inspector, went to Kiev in September 1994, rented an office and waded into the problems with arrival of the



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Barrett Haver (r.) with Ukrainian workers

American equipment. In the first few months, there were far more problems than solutions.<sup>31</sup> Haver worked for Connell, but virtually all his work in Ukraine was with Colonel Serdyuk and officials at the Ministry of Defense. There were dozens of joint meetings to work out processes for what would happen when American equipment arrived in Ukraine.

Jointly, they developed and coordinated with Connell and U.S. government policy officials, agreements for customs declarations at the ports, and legal waivers stating the U.S. government or its entities would not be subject to customs duties as stipulated by U.S.-Ukraine CTR umbrella agreements. Jointly, they also developed letters of verification for state and local tax officials. New inventory forms and procedures were created, ones accounting for the location and condition

of the equipment. At one of the early meetings, Defense Minister Shmarov told Connell they wanted American heavy equipment arriving at Ukraine's ports to be transported to a large military equipment repair depot in Uman. Connell agreed. Consequently, he and Jagger decided to place a small CLS office in Uman. Mark Beha, a Hughes manger fluent in Russian, flew to Ukraine in February 1994 to set up the office. Located approximately 250 kilometers south of Kiev, Uman was a small isolated city. "That first trip to Uman," Beha recalled, "I almost refused the job when I saw the facility."<sup>32</sup>

"The job just looked almost insurmountable," Beha said, "to turn that facility, which we had been directed to use, into an operational logistics and maintenance facility."<sup>33</sup> The condition of the former Soviet military depot was deplorable. It was, however, characteristic of facilities across the region. Working in the field, U.S. project managers and contractors were challenged by the deteriorating conditions they found in military and industrial facilities in Ukraine, Russia and the other nations, year after year. There were other major difficulties for the American project manager. Uman was a classified Ukrainian MOD facility, which meant every

American employee had to be escorted by military officials at all times from the gate to the office inside the facility. Time consuming and arduous, this requirement proved to be very difficult to carry out in practice. Nevertheless, Beha threw himself into the project, often working 90-100 hours a week. Beginning in April 1995, American heavy equipment began to arrive at ports in Odessa, Crimea. There were all sorts of equipment items, from heavy road graders, large excavators, road tractors, trailers, large cranes, to huge railroad cranes; weighing up to 225 tons. At the ports, Beha recalled, "initially it was a nightmare to clear customs." Some shipments took weeks, others months; a few more than a year to get Ukrainian customs approval for American equipment to leave the port and be transported to the military depot in Uman. Once they received equipment, U.S. and Ukrainian officials did a joint inspection and inventory, annotating discrepancies, then prepared and signed a letter transferring custody to the defense ministry. The American contractor was the authorized agent of the U.S. government to sign all documents transferring CTR-purchased equipment to the Ukrainian Ministry of Defense.<sup>34</sup>



Ukrainian workers at SS-19 launcher silo complex

Most, but not all of the American equipment arrived during the next two years, 1995-1996. In all, there were approximately 300 items of heavy equipment. To transport road graders, heavy cranes, trucks and other items from the depot to missile sites, Ukrainian defense ministry officials organized large truck convoys that traveled out from Uman to Pervomaysk, Khmelnytsky, Vinnitsa and Dnieprepetrpsvsk. To train the 43<sup>rd</sup> Rocket Army technicians and local contractors on how to operate the equipment, U.S. company representatives traveled to Ukraine. By June 1996, when intensive work began in the missile fields to eliminate the SS-19 silos, there were two CTR logistics support satellite offices, each staffed with approximately 20 locally hired Ukrainian maintenance specialists, located at missile division bases at Pervomaysk and Khmelnytsky. Their job was to work with the 43<sup>rd</sup> Rocket Army officers, American integrating contractor managers and local Ukrainian firms to keep American heavy construction equipment operational and maintained. This concept worked well and became the standard approach for all subsequent CTR projects, in not only Ukraine, but in Kazakhstan and Russia. Without question, Ukraine was the proving ground for both concepts; using a contractor to carry out critical logistics work, and using American integrating contractors to plan, organize and manage SS-19 silo elimination projects across the nation.<sup>35</sup>

### The SS-19 Integrating Contractor

In September 1995, Bechtel Corporation, a large American international construction and engineering firm, won a \$25 million contract to be the SS-19 integrating contractor.<sup>36</sup> During the previous nine months, American and Ukrainian officials worked together to define and negotiate the scope of the contract. John Connell, Doug Norman, David Freeman and others traveled to Kiev frequently, working out the complex requirements with Ukrainian Defense Ministry officials, Colonel Alexander Serdyuk, Colonel I.M. Sosedko, Lieutenant Colonels A.G. Drobot and U.V. Ovcharenko. The comprehensive contract required the American integrating contractor to plan and manage elimination of 130 SS-19 missile silos in 13 SS-19 regiments, 13 unified command posts and two training silos. Bechtel's project manager explained the contract's first annex, the presidential schedule, had been approved by Ukraine's National Security and Defense Councils. Besides hiring subcontractors and

overseeing detonation of the silos, the integrating contractor had to plan, schedule and organize disassembly and removal of the missiles, missile fuels, and command post facilities. Bechtel would then manage elimination of administrative buildings, electric supply reservoir, refrigeration plant, guard houses, fuel and water storage facilities, wire fences, connecting tunnels, underground communications lines, pipelines, electric boxes, antennas and communication systems. All 130 SS-19 silos would be detonated to a depth of six meters and, after lying open for 90 days to allow verification by satellite imagery as required by the START Treaty, the silo launch tubes would be filled in with rubble and covered with soil. Finally, the entire missile complex would be graded and restored to agricultural fields or forest, depending on its original state.<sup>37</sup>

Colonel Serdyuk and Ukrainian defense ministry officials insisted, and American CTR officials agreed, that the integrating contractor use Ukrainian firms as subcontractors to carry out most of the disassembly and elimination work. Since Russia's Strategic Rocket Forces had two rocket armies equipped with SS-19 missiles in its active forces, Ukraine's parliament stipulated that the national government would not reveal sensitive equipment or classified procedures. As a consequence, all sensitive work on Ukraine's SS-19s would be performed by subcontractors recommended by the Ministry of Defense's Strategic Nuclear Forces Administrative Control Center. These subcontractors would be paid by the integrating contractor.

When these requirements had been negotiated and agreed to, the scope of work was so sweeping that policy officials in both nations decided to draw up a new CTR implementing agreement to determine the legal foundation and specific obligations of each party. Colonel Serdyuk and Gloria Duffy signed the new agreement June 27, 1995 in Kiev.<sup>38</sup> Three months later, after a vigorous competition and joint selection process, Bechtel won the SS-19 integrating contractor award. Later, General Mikhtyuk wrote that "introduction of the integrating contractor concept ... completely changed the existing mechanism and the type of Ukrainian-American cooperation in the sphere of nuclear disarmament."<sup>39</sup>

J. Randall Regan, Bechtel's CTR program manager for Ukraine, arrived in Kiev in early October 1995, just three weeks after contract award. An experienced manager of international projects, Regan knew he had to hire, plan, schedule and orchestrate the first of 60 SS-19 silo eliminations beginning in

early spring 1996. He immediately began to hire ex-patriots and put out bids for Ukrainian subcontractors. He met with General Mikhtyuk, who explained in his authoritative manner, that he wanted Bechtel's Ukrainian subcontractors to hire ex-rocket army men. Only rocket officers, the general explained, had experience working in SS-19 missile complexes, and silo work was very dangerous.<sup>40</sup> Regan agreed it was dangerous work, but insisted that he had to follow the U.S. government's federal acquisition regulations, which required full and open competition from any qualified firm. Dave Freeman, the senior American contracting officer from the Defense Nuclear Agency, insisted that Bechtel had to follow the complex acquisition procedures, despite the irrefutable fact that no Ukrainian firms were aware of these regulations and no one in Ukraine did business with the government or its ministries, competitively. Regan told the general: "Because of the acquisition regulations we have to bid this work. You give us a selected amount of eligible and licensed contractors, three, four, five or six, and we'll bid the work."<sup>41</sup> General Mikhtyuk replied the winning contractor would hire ex-rocket forces men because, "they know what to do." Into this tense developing dilemma stepped two American officials, John Connell and Doug Norman.

Connell was the CTR country manager for Ukraine. He was the senior U.S. representative on the joint U.S.-Ukrainian committee defining scope of work for the integrating contractor. He headed up the source selection committee, and now he was the contracting officer responsible for its implementation. As a senior acquisition specialist in program management, he became the key U.S. government official in Ukraine. In the fall and winter months of 1995-1996, Connell traveled to Ukraine frequently, always meeting with Bechtel's program manager Randy Reagan, Ambassador William Miller, Colonel Serdyuk, and at times, General Mikhtyuk. A serious man, Connell prepared for each discussion meticulously, stressing willingness of the United States to finance the dismantlement program while insisting on following bilateral implementing agreements and federal law. For all bidders on the subcontracts, he insisted on fair competition. He demanded that the Ukrainian firms be licensed, staffed with experienced specialists and prepared to adhere to integrating contractor safety rules and accounting policies. Conversely, he demanded Ukrainian subcontractors be paid fairly and promptly. As American CTR country manager and arbitrator of disputes, he could quietly say "no" and hold to

that decision decisively. As the American effort in Ukraine transitioned from making policy declarations and signing implementing agreements to carrying out actual projects in the field, Connell's influence and leadership emerged.<sup>42</sup>

The other key American was Doug Norman, a U.S. embassy official, who was extraordinarily knowledgeable on technical characteristics of SS-19 and SS-24 rocket systems. Able to discuss detailed missile technical questions with General Mikhtyuk and his senior commanders in Russian, Norman quickly grasped the flow of the rocket army's process for disassembling the missiles. In most large-scale, complex construction projects, the senior project manager has detailed knowledge, amassed from years of experience, of the weapon system and its peculiarities. In Ukraine, no American program manager had accumulated that level of technical mastery on Soviet-designed and equipped strategic rocket forces. Norman had. Connell would lead the meetings and Norman would serve as a technical advisor, able to explain difficult issues and propose solutions to Ukrainian military officers, American company managers, and U.S. government CTR officials. From 1995-1999, there was no analyst who contributed more to facilitating CTR in Ukraine than Norman.<sup>43</sup>

The grease that reduced friction in this large-scale cooperative threat reduction effort was trust and mutual respect. Frankly, the trust that developed between Ukrainian defense officials, military commanders and staffs, and American government and integrating contractor managers was not based on money. Instead, it developed in hundreds of meetings over discussions about terms of the implementing agreements, details in the presidential program, explanations for dismantling missile complexes, reviews of projected schedules, and discussions of standards to be used evaluating the performance of individual projects. Major General Vladislav Nikolavich Bushaev was the chief engineer for the 43<sup>rd</sup> Rocket Army. He planned and engineered elimination of all 130 SS-19 silos and 13 launch control centers. A 35-year veteran of the Soviet Strategic Rocket Forces, Bushaev was a serious, tough, military engineer who knew the rocket systems thoroughly. During elimination of the 43<sup>rd</sup> Rocket Army, he rose from colonel to major general and the rocket army's deputy commander. When asked to evaluate working with the Americans, Major General Bushaev concluded: "There were many fine specialists from both countries. As for the Americans, especially the first team - Connell and Norman, they knew many of the issues extremely well; some

I am ashamed to say, better than we did. Consequently, they were always easy to talk and work with."<sup>44</sup> Bushaev said they worked out technology issues in 1995, and then began silo eliminations in 1996.

### First SS-19 silo elimination, Pervomaysk, January 1996

At some point in the fall 1995, Secretary Perry's and Defense Minister Shmarov's staffs determined the first SS-19 silo elimination would be held in early January 1996. They invited Russian Defense Minister Pavel Grachev, and Commander of Russian Strategic Rocket Forces General I.D. Sergeev, to join them for a series of trilateral and bilateral meetings in Kiev on January 4-5, 1996.<sup>45</sup> Everyone accepted, and on the first day Russian, American and Ukrainian defense officials met in Kiev with President Kuchma and his senior ministers. Ukraine's Defense Minister Shmarov briefed that the 43<sup>rd</sup> Rocket Army and Ukrainian armed forces had deactivated 130 SS-19 missile complexes, and had shipped more than 70 percent of the

nuclear warheads to industrial complexes in Russia. Perry explained that the first phase of officer housing had been completed, with construction of 203 prefabricated houses in Pervomaysk and 135 apartments in Khmel'nitsky. Then, Minister Shmarov announced that, as scheduled, the first SS-19 silo blast would take place the following day in the Pervomaysk missile division.<sup>46</sup>

SS-19 site 110 was quite remote; located more than an hour's drive from Pervomaysk. The trip for the three defense ministers and senior military officials began with a short flight from Kiev to Uman, where they planned to board helicopters for a short flight to the silo site. In foul winter weather, the Ukrainian Air Force plane took off from Kiev with Secretary Perry, General Grachev, General Sergeev, Minister Shmarov, U.S. Ambassador Miller, Secretary Horbulin, Ukraine's National Security and Defense Council, Colonel Serdyuk, Chief of the Strategic Nuclear Forces Administrative Control Center, Ash Carter and others. As they approached the Uman airport, the pilot made a blind descent to the runway through heavy snow and fog. Landing askew, the wingtip clipped a snow bank throwing the defense ministers, generals,



National Archives - Still Picture Branch

Russian Minister of Defense Grachev, Ukrainian Minister of Defense Shmarov and U.S. Secretary of Defense Perry (l.-r.), June 1996

ambassador, and others to the floor and under tables. The aircraft nearly flipped over and crashed.<sup>47</sup> Mark Beha, CTR contractor watched as the plane skidded down the icy runway, hitting several snow banks, and sending up huge plumes of snow. "It scared everyone to death," he remembered, "sleet and icy rain was coming down hard."<sup>48</sup> Quickly, they cancelled the helicopter and the three defense ministers and a few others piled into a large CLS suburban vehicle and drove through the ice storm to the site. There, Perry, Grachev and Shmarov turned a key that blew up the first SS-19 missile silo. The silo blast created worldwide publicity and sent powerful signals to the Russian and Ukrainian governments that the United States intended to meet its commitments.<sup>49</sup>

Senators Sam Nunn and Richard Lugar went to Ukraine in April to witness the second SS-19 silo explosion. General Mikhtyuk gave them a detailed briefing and tour of the missile complex. He explained the process for deactivating missiles and equipment, and removing the missile complex from military alert status. He explained that General Bushaev and Randall Reagan of Bechtel had worked out a schedule to eliminate 60 SS-19 silos in 1996, and another 70 in 1997 and 1998. General Mikhtyuk introduced the U.S. Senators to the rocket army officers and specialists carrying out the work, and the civilian contractors planning the blast. Then, Nunn and Lugar turned keys that blew up the SS-19 silo.<sup>50</sup>

Secretary Perry, Russian Defense Minister Grachev and Ukrainian Defense Minister Shmarov returned to same missile site in Ukraine in June 1996. Ash Carter had the idea for the two defense ministers to go back to silo 110. The SS-19 missile and its warhead were gone, of course, but so were the large steel blast doors, security fences and the silo itself, which had been filled with rubble and covered over. The entire missile complex had been graded and restored as an agricultural field. The fields had been plowed and planted. The large party flew to the site without incident, and as Carter explained, they "walked to the spot where the lid of the missile silo had been, and the three defense ministers planted sunflowers, sowing more seeds of peace."<sup>51</sup> Once again, publicity was enormous generating support in Congress, the Ukrainian Rada and Russian Duma.

While this was Secretary Perry's last visit to Ukraine, four trips in two years clearly signaled that the U.S.-Ukraine CTR program was a top priority in the U.S. Defense Department. Every month, Secretary Perry met with his senior CTR policy and program managers and reviewed the status of each



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Senators Nunn and Lugar turning keys to eliminate an SS-19 silo

nation's projects and programs. He testified to Congress, spoke publicly at international defense forums and conferences, and supported the program with President Clinton and the National Security Council. Despite evidence of Perry's support, some Ukrainians feared the American assistance that had been promised in the Trilateral Agreement would cease or dry up. The final nuclear warhead had been shipped to Russia the same week in June that the defense ministers had returned to silo 110. Consequently, Ukraine's president, ministers, parliament and press would closely monitor all SS-19 silo eliminations in the summer of 1996 and beyond.

### **SS-19 silo eliminations in 1996, 1997, 1998**

The presidential schedule called for 60 SS-19 silos to be eliminated in 1996, 50 in 1997, and 20 in 1998. It also projected that during these years, the American integrating contractor would plan and carry out dismantlement of two SS-19 training silos, one SS-18 silo and 13 SS-19 launch control centers. All sites would be restored within a year of

dismantlement. Randy Reagan, Bechtel's program manager planned to begin eliminating SS-19 silos in late spring 1996, when the ice thawed and snow removal could begin.<sup>52</sup> He sent Don Milicevic, Bechtel's SS-19 field project manager to Khmelnytsky, headquarters of the 19<sup>th</sup> Rocket Division. The division had 10 regiments of SS-19 missiles, a headquarters area for maintenance, security, communications, training and administration, and approximately 5,000 men. Milicevic was a Ukrainian-American construction engineer, with experience working on numerous international projects. Fluent in Russian, he moved into the 43<sup>rd</sup> Rocket Army's hotel in Khmelnytsky, and began work on the SS-19 silo elimination project. The project, itself, had to follow the presidential schedule on where to begin, how to access the site, how to dismantle missile silos, and what to do with salvaged materials. Consequently, Milicevic had to work closely with Major General V.V. Schvec, the 19<sup>th</sup> Rocket Division Commander. From the beginning, the two men worked well together.<sup>53</sup>

In the missile fields, silo destruction had already begun. During the fall and winter months of 1995, as Bechtel was planning and organizing the project, and as American CTR-purchased equipment was arriving in Ukraine, John Connell persuaded the Defense Nuclear Agency to issue a small \$1 million silo dismantlement contract to the Uman Military Repair District.<sup>54</sup> Colonel Nikolai Denysyuk, the depot director, explained they were responsible for carrying out preliminary dismantlement work at 20 SS-19 silo sites.<sup>55</sup> That meant they prepared the sites, acquired and delivered dismantlement equipment, secured each site, then removed secret equipment, taking out the head works and supporting equipment. They did not destroy the missile silos. Colonel Denysyuk recalled the depot's procurement officers had to buy equipment from "all over the former Soviet Union."<sup>56</sup> They traveled to Russia to purchase specialized tires, and they went to St. Petersburg to purchase parts for military rail cars and army trucks. The Uman depot also contracted for services with Russian military design bureaus, firms that designed the original SS-19 silos. Consequently, when Bechtel's project managers arrived in Pervomaysk and Khmelnytsky, some destruction work had already been completed.

In Khmelnytsky, Bechtel's Milicevic began by interviewing retiring senior rocket officers to work as superintendents at silo destruction sites.<sup>57</sup> Following instructions based on American regulations, he interviewed three retired officers to work as the company's superintendent at each site,

selecting one who then would work with Colonel Bushaev. Within the rocket army, Colonel Bushaev had established and trained small, specialized engineering teams who would work in the silo areas where volatile missile fuels and sensitive components were located.<sup>58</sup> Next, Milicevic and Reagan issued bids for Ukrainian subcontractors and began hiring local firms. A Donetsk construction and mining firm, Shahspecstroy, received a contract to carry out silo blasting work. By late July, this Donetsk firm had approximately 140 people working at missile sites.<sup>59</sup> A Ukrainian civil engineering and construction firm, Research Innovative Technologies Implementation Enterprises – Stroom RITIE, received a contract to dismantle site buildings and structures, and to prepare the area for site restoration. The firm's director general, Oleg Blonar explained the company had assembled a team of experts – engineers, former rocket officers, economists, accountants and ecologists, who had a good working knowledge of SS-19 missile systems and contracting procedures.<sup>60</sup> "We won the bid," Blonar said, "based on our price and technical support."<sup>61</sup> By late May, Bechtel's project managers had contracted with 10-12 other Ukrainian firms and were ready to begin eliminating silo complexes in the missile fields. Because this project had great significance, Jim Reid, John Connell and the other CTR contracting officers and managers followed these developments closely.

The 1996 work plan, which had been coordinated and approved by Ukraine's Defense Ministry and Colonel Serdyuk's Administrative Center, was to eliminate 40 silos in the Khmelnytsky missile division and 30 silos in the Pervomaysk missile division. Initially, all work was delayed due to the administrative center's failure to execute contracts for environmental surveys and secure permits from local governments. These delays threatened to hold up silo elimination work for several months.<sup>62</sup> Suddenly everything changed. In May 1996, President Kuchma appointed Colonel General Oleksander Kuzmuk as Minister of Defense. At the same time, the president named General Mikhtyuk to be a new Deputy Minister of Defense, responsible for the elimination of all strategic missile and bomber forces.<sup>63</sup> In addition, Mikhtyuk was assigned responsibility for conversion of strategic forces infrastructure, for carrying out general control of all work, and for interacting with representatives of government ministries, central state organizations, and foreign governments and their entities. With this sweeping decree, Colonel Serdyuk's administrative

center lost its authority and General Mikhtyuk and the 43<sup>rd</sup> Rocket Army became the focal point for implementing all U.S.-Ukrainian CTR plans and programs. The United States had no influence, or even knowledge, of this major Ukrainian defense reorganization.<sup>64</sup>

While American CTR program managers were apprehensive that the Ukrainian defense ministry reshuffle would delay and complicate the SS-19 project, it did not. Once work began in late June, silo elimination followed the presidential schedule and the 43<sup>rd</sup> Rocket Army's work plan. In Khmelnytsky, Major General Schvec, commander of 19<sup>th</sup> Rocket Division, met with Milicevic every day to review the schedule and go over issues concerning site access, work plan or safety.<sup>65</sup> Ukrainian subcontractors began working at the initial silo sites. General Bushaev, the rocket army's senior engineering officer visited each work site every day.

Dismantling and eliminating a single SS-19 missile site required considerable work, which began with workers removing the large, steel-reinforced blast door. They then arc welded the steel door parts into small blocks for resale as scrap metal. Next, workers blasted the silo equipment ring and removed steel from the silo. Then they prepared

and blasted the lower equipment rooms and the 28-meter diameter silo launch tube to a depth of 8 meters. Following this silo work, workers stripped the missile complex's large, concrete communications antenna off its embedded steel rebar and then blasted the antenna apart with explosives. Finally, another team of subcontractors destroyed all the

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### General Vladimir I. Mikhtyuk 43<sup>rd</sup> Rocket Army New Responsibilities

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structures, buildings and fences on-site. After a period of 90 days, they filled in the silo hole with rubble. Materials at the missile site that could be salvaged were set aside, and then transported to the missile division headquarters for storage and possible resale.

At each missile site, Bechtel employed Ukrainian superintendents, who worked with 43<sup>rd</sup> Rocket Army officers, controlling the daily schedule. Actual dismantlement work was carried out by Ukrainian subcontractors. The Ukrainian



Director General of Stroom RITIE Oleg Blanar (c.) with retired missile officers

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## With Courage and Persistence

firms hired former rocket army officers familiar with the complex missile systems. General Mikhtyuk went to every site, meeting with 43<sup>rd</sup> Rocket Army personnel and the teams of subcontractors. The dismantlement subcontractor teams usually worked at a single site for 40-44 days before moving on to the next missile complex.<sup>66</sup> Depending on the work required, teams used the American CTR heavy equipment – heavy road graders, dump trucks, cutters, large excavators, road tractors, trailers, large cranes, and all manner of communications gear, which had been shipped to Ukraine and turned over to the Ministry of Defense. In a complex transfer arrangement, the defense ministry signed the equipment over to Bechtel for the duration of dismantlement work. Upon completion, it reverted to the ministry. In the field, CTR contractor maintenance teams kept equipment functioning and in repair.<sup>67</sup>

The work was quite intense. In Khmelnytsky, Bechtel's project manager recalled that he worked 12 hours a day, 7 days a week for months on end.<sup>68</sup> By late summer 1996, Bechtel had teams of Ukrainian subcontractors working at 17 silo elimination sites in the 19<sup>th</sup> Missile Division, and another set of subcontractor teams were dismantling eight silo sites in the 46<sup>th</sup> Missile Division. By the end of year, Bechtel, the Ukrainian subcontractors, and the 43<sup>rd</sup> Rocket Army, had met the presidential schedule objective of eliminating 60 SS-19 silo sites in 1996. Although announced and incorporated into the schedule, few thought this would actually happen. It was an accomplishment. One observer recalled that it was "completely unenvisioned."<sup>69</sup>

When compared to the CTR effort in Russia or any other nation, elimination of 60 SS-19 missile silos in Ukraine in 1996 was extraordinary. As work was underway in the missile fields, General Mikhtyuk asserted his authority. A powerful general officer, Mikhtyuk reorganized the rocket army's headquarters and departments to concentrate on deactivating the missile complexes and eliminating silos.<sup>70</sup> He instituted a new system of responsibility, controls and reporting. He negotiated new agreements with local governments. He worked directly with John Connell, Doug Norman and other American CTR officials. In Kiev, Defense Minister Kuzmuk worked with the Rada's security committees to secure approval of an order clarifying access to Strategic Rocket Forces sites and facilities.<sup>71</sup> Prior to this order, defense ministry regulations stipulated that any person working at a strategic missile complex had to have

45 days of training on the missile systems. For American and Ukrainian contractors this requirement had been a major impediment.

Then, in October 1996 General Kuzmuk persuaded the Cabinet of Ministers to issue a decree clarifying exemptions from taxes and fees for contractors who were carrying out ICBM elimination work in Ukraine.<sup>72</sup> Next, the Defense Minister tackled the issue of American construction equipment being held up in Ukrainian ports. General Kuzmuk worked directly with the Foreign Ministry and



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Explosion of a SS-19 missile silo

Customs Bureau to clarify the special arrangement under the U.S.-Ukrainian CTR framework agreement. Each of these issues – access, taxes and customs – had become major problems, often holding up and delaying U.S. CTR assistance to Ukraine. Their resolution was a significant achievement for the Ukrainian government, and served as a template for other nations receiving assistance.

General Kuzmuk explained that, “when we removed the bureaucratic obstacles, I tasked Colonel General Mikhtyuk to work out the schedule for the state’s program on the disarmament of the strategic offensive arms.”<sup>73</sup> Mikhtyuk and the army planning staff developed a new detailed plan for eliminating the nation’s strategic rocket and bomber forces, with U.S. assistance that would last from 1996 through 2001, the final date for Ukraine to meet all START Treaty reduction requirements. After review, General Kuzmuk presented the plan in all its details in a three-hour



Ukrainian Minister of Defense General Oleksander Kuzmuk

briefing, which he gave personally, to President Kuchma and the members of the National Security and Defense Council. Kuchma approved the plan and schedule, signing a decree giving the defense minister executive authority.

As the elimination work unfolded, the defense minister followed the dismantlement program closely, receiving daily reports and quarterly briefings from General Mikhtyuk, meeting

with senior American program officials, and traveling out to missile complexes to periodically examine the elimination work. At international security meetings, he met with Defense Secretary Perry, and his successor William Cohen. Reflecting on the years when he served as Ukraine’s Minister of Defense, 1996-2001; General Kuzmuk commented, “It is not a secret that nuclear disarmament and elimination of strategic nuclear forces were not accepted positively [in Ukraine] by everyone. So, at that time we needed courage.”<sup>74</sup>

In 1997 the silo elimination work continued at a strong pace, with 50 SS-19 silos being eliminated. In 1998, the final 20 SS-19 silos and missile complexes were eliminated. The CTR program funded every aspect of this work. Ukrainian subcontractors performed the bulk of the work. Randy Regan said that by midyear 1997, Bechtel had more than more than 100 Ukrainian firms under contract working on all the various elimination projects and other programs. He estimated that, “98 percent of the work is being done by Ukrainian firms, and 98 percent of the people are Ukrainians.”<sup>75</sup> The Yulia Company, based in Vinnitsa, was a Bechtel subcontractor working in the field eliminating missile complexes. Yevgeny Grigorievich Korolchuk, Yulia’s project manager, explained that one major contract was to dismantle and eliminate buildings, structures and equipment in the 3<sup>rd</sup> Regiment in the Khmelnytsky missile division. The work took 10 months. “All told,” Korolchuk said, “we had 270-320 people working on the project, with roughly 50 working at each site, and nearly 60 on the command post.”<sup>76</sup> They lived in field camps provided by Bechtel. As the work proceeded, Yulia had work teams dismantling five silos simultaneously. Korolchuk recalled that Generals Mikhtyuk and Bushaev visited the sites frequently.

Igor Yefimovich Kravets, Yulia’s business manager, said it was clear that “Bechtel was our customer and we were the subcontractor.”<sup>77</sup> When the work was completed, the company was paid monthly by Bechtel’s project manager. Project manager Korolchuk recalled that, “we never missed a single deadline for six years.”<sup>78</sup> The company won other contracts, growing to 400 people by 1999-2000. Many workers and managers were former-SRF officers and military men. Korolchuk explained that “for me as project manager and supervisor, I learned a lot about safety measures while working with Bechtel. We understood what safety really means...we did not have a single accident. Secondly, we learned about efficiency, planning and quality control.

Thirdly, they taught us about business.<sup>79</sup> In the late 1990s this construction firm established its reputation throughout Ukraine. “We became well known,” Kravets explained, “mainly because we had worked on a large international project. We did quality work and completed it on time, too, which helped promote our name and image.”<sup>80</sup>

As the elimination work unfolded, Bechtel’s role as integrating contractor emerged more forcefully. The initial CTR implementing agreement specified the integrating contractor would manage assistance and services for disposing of the SS-19 liquid propellants. The amount was quite large: 100,000 metric tons of amyyl, and 3,800 tons of heptyl.<sup>81</sup> Since the fuels were toxic and volatile, they had to be stored in steel tanks. For three years, 1994-1996, 43<sup>rd</sup> Rocket Army engineers and Russian nuclear specialists traveled out to each of the 130 SS-19 missile complexes, separated the warhead from the missile, lifted the SS-19 missile from the silo, and transferred the toxic liquid fuels into trucks on-site. Then, Rocket Army personnel convoyed toxic fuels and missiles to storage sites located at the missile division headquarters, either at Pervomaysk or Khmelnytskyi. The fuels were transferred into temporary storage tanks, while the missiles sat in their canisters in storage yards. Bechtel had responsibility for planning, organizing and transporting the fuels, missiles and components from these temporary storage areas to Ukraine’s national central storage site.

### Eliminating SS-19 toxic fuels, missiles, and rocket motors

In 1994-1995, the U.S. CTR program contracted for construction and delivery of 60 large steel tanks for temporary storage of the heptyl rocket fuel, and purchased 58 intermodal tank containers for transporting the fuels over Ukrainian railroads to a central national storage facility.<sup>82</sup> In 1995, Ukraine’s Defense Ministry directed the heptyl fuel be sent from missile division storage areas to a central storage facility located in Shevchenko, a city in eastern Ukraine. John Connell secured agreement from Washington, and directed Bechtel to plan and contract for expansion of the Shevchenko storage facility. Once that work was completed, Bechtel scheduled movement by rail of more than 3,800 metric tons of heptyl fuel from missile division storage facilities to the new expanded Shevchenko facility and other government-

designated fuel storage depots. By July 1998 all toxic missile fuels had been transported and stored in the depots.<sup>83</sup>

By the time the fuel had arrived at Shevchenko, General Mikhtyuk had several discussions with John Connell, General Roland Lajoie, Jim Reid, and American CTR officials on toxic fuels final disposition. Ukrainian chemical specialists had recommended using a process of catalytic hydrogenation, developed by an American firm Thiokol, to convert heptyl to a surfactant for resale. Thiokol had developed a modular conversion plant which could be shipped to Ukraine. Once in-country the new plant, with new equipment installed, would convert toxic missile fuel into a surfactant product. In fact, the American missile fuel firm had already received a CTR contract to install and operate a similar plant in Russia.



Defense Threat Reduction Agency

Intermodal Tank Container

Discussing this issue, General Mikhtyuk met with Paul Boren, Doug Norman, and John Connell. The Americans offered to pay for transporting Ukrainian heptyl to Russia for processing or to set up facilities in Ukraine to burn the fuel. After consideration, Ukraine opted to sell the heptyl fuel to Russia. U.S. CTR managers agreed to transport it from Ukraine to Russia and to contract for the Shevchenko facility’s neutralization and dismantlement.<sup>84</sup>

Next the SS-19 missiles had to be transported. There were 130 SS-19 missiles stored in missile canisters, sitting in temporary storage areas in Pervomaysk and Khmelnytsky. These missiles had to be moved by rail in special railcars across Ukraine to a new national neutralization and disassembly facility in Dnipropetrovs’k. Bechtel had responsibility for planning, scheduling, transporting and delivering all 130 SS-19 missiles in their canisters from the missile division’s temporary storage areas in Pervomaysk and Khmelnytsky to a new SS-19 neutralization and dismantlement facility in Dnipropetrovs’k. Movement

would be by rail. As preparations were getting underway, Ukraine's government announced it had agreed to send 19 SS-19 missiles to Russia as payment of oil and gas debts.<sup>85</sup> As a consequence, Bechtel arranged for shipment of 111 SS-19 missiles and canisters to the new facility. All missiles arrived from September 1996 through July 1998 in Dnipropetrovs'k. Later Bechtel managed shipment from missile divisions to the storage facility at Dnipropetrovs'k via rail of 133 SS-19 aggregate instrument block units, which were the missile's guidance and warhead launching sections.<sup>86</sup>

In Dnipropetrovs'k the American firm responsible for contracting, managing, and operating the new storage and dismantlement facility was Morrison-Knudson of Cleveland, Ohio. In September 1994, this American firm, which had



Inside CTR renovated warehouse at Dnepropetrovsk, 1998

extensive experience designing and building international projects, won a CTR contract to plan, organize and manage renovations of a large, unused former missile factory in Dnipropetrovs'k.<sup>87</sup> The Ukrainian government designated the missile factory building, and U.S. CTR program officials agreed the American contractor would use Ukrainian design and construction firms to renovate and equip the building and adjacent storage yard. When equipped, the new facility would be capable of neutralizing residual toxic fuels inside the SS-19 missiles, dismantling and destroying the missiles through shredding, separating and recovering the precious metals, and cutting up the missile canisters.

Following a subsequent contract competition, Morrison-Knudson became the integrating contractor responsible for facility design, construction, equipment purchase and installation, testing, logistical support, and operations.<sup>88</sup> A few weeks after initial contract award, Wayne H. Holcombe,

an experienced Morrison-Knudson program manager, arrived in Kiev and participated in a series of meetings with Ukrainian defense and industrial ministry officials. He worked closely with Stanislav Konikov General Director of KBuznoy, a Ukrainian missile design firm in Dnipropetrovs'k. In addition, three other Ukrainian managers, S. Konukov, director of Yuzhnoy, an industrial design institute, V.C. Alekseev, director of Yuzmash, a large machine manufacturing plant, and Vladimir Sokol of Yuzhnoy, were instrumental in providing technical assistance and political support with the government at critical times.<sup>89</sup>

Working with Holcombe, Yuzhnoy's engineers redesigned the former missile factory to accommodate moving the SS-19 missiles in their canisters from the rail yard into the factory, placing the missile into a special purging chamber, moving it from the chamber into a shredding area, and then after shredding taking the metal parts to an extraction area. Once the design was approved by government ministries, the equipment was purchased or taken from government stocks in the United States. Then Holcombe put out competitive bids, and a local construction firm, United Engineering Company, was subcontracted to do the work.<sup>90</sup>

Gene Hicks, Morrison-Knudson's site project manager, supervised this Ukrainian construction firm and other smaller subcontractors.<sup>91</sup> They gutted the former missile factory, repaired and sealed the walls, and cleaned the entire interior. They also installed new cranes, purge chambers, cutters and shredders, hydraulic pumps, and safety and communications systems. They constructed three staging areas: a large concrete pad for receiving missiles and canisters, another a pad for pre-disposition of shredded missile parts and components, and a third paved pad to be used as a foundation area for large mobile Anderson incinerators. Due to the toxicity of missile fuels, environmental inspections by state and local officials covered every aspect of the neutralization and liquidization process. Inspectors continuously sampled factory purging chambers, and the ambient air, ground water, and soil.

During the 20-month construction project, Hicks had to meet the project's cost and schedule requirements in a business culture that had functioned well in the Soviet command economy. Plus, the neutralization facility was located in the midst of a huge missile design and manufacturing complex that was still producing missile parts for space launches and foreign military sales. Security became a major issue. Access to the former missile manufacturing building by American



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CTR Elimination projects across Ukraine

project managers and Ukrainian subcontracting firms was frequently delayed for the vaguest of security reasons. Frustrated, Hicks shut down the entire project one day, telling everyone there would be no pay for no work. Ukrainians did not believe this ultimatum since in the past Soviet system there had been frequent work stoppages, but with no loss of wages. Supported by CTR program managers in Washington, the American project manager did not relent. After two days, access was granted to the site for all workers.<sup>92</sup>

Next, Hicks insisted that Ukrainian firms meet U.S. and company standards for on-the-job safety, with all workers wearing hard hats, special boots and safety glasses. He provided the equipment. Ingrained in the American work culture, these safety standards were not shared by all Ukrainian workers. Finding some men without hard hats and safety glasses, Hicks fired them. "I remember when we fired the first person. He told me: 'You can't do this. Nobody fires anybody here. We have a job forever.'" As he left the site, the Ukrainian told the American, "I'll be back." The next morning when he came back, Hicks told him, "You're not hired here. Go home. You are not getting paid." Plant security escorted him off the job. Hicks remembers that the "message went through all of our subcontractor organizations rapidly."<sup>93</sup>

Expectations of safety on the job were just one of many issues that surfaced on this construction project. Language was problematic. Every document had to be translated into two languages. There were frequent meetings in Kiev and other cities, each meeting had to have translators and people recording decisions to document project instructions, schedules and issues. A simple, recurring, straightforward issue; for example; payments for the workers became problematic. Under Ukrainian banking laws, Morrison-Knudsen did not qualify to have a local bank account, so Hicks would send a detailed invoice stating each worker's performance against a contract line to the corporation's headquarters in Ohio. In turn, the American corporation's finance department would purchase an international wire transfer in U.S. dollars and send the workers' pay to a local bank in Dnipropetrovsk. Every two weeks Hicks and his deputy would go to the bank and pick up the payroll. It took a while. As they waited, bank officials counted out \$25-30,000 in \$100 bills. Then, the American project managers would load sacks of dollars into their pickup and drive to the work site. Assembling the Ukrainian subcontracting firm's managers, Hicks and his deputy would count out the wages for each worker. Since payday was every two weeks, Hicks believed paying the workers in dollars had

significant advantages. Ukraine's currency, first the ruble and then the hryvnia, had been devalued through unchecked inflation.<sup>94</sup> Paying wages in American dollars produced results, with Ukrainian firms hiring better workers; workers followed construction schedules and they met American contractors' safety standards.

When asked if Ukrainian subcontracting firms paid their workers, Hicks replied that it was part of his job to insist on American standards. John Connell and Mary Ann Miles demanded Ukrainian workers must be paid for their services.<sup>95</sup> When Miles visited the SS-19 neutralization and disassembly facility in Dnipropetrovsk, she always asked workers directly if they were getting paid. By April 1996 construction work on the SS-19 neutralization and dismantlement facility had been completed. Following delays in obtaining licenses and permits, the new facility opened for operations on July 26, 1996. The initial train carrying SS-19 missiles arrived at the new SS-19 neutralization and dismantlement facility in Dnipropetrovsk in October. Over the next two and a half years, this facility liquidated 111 SS-19 missiles and canisters.<sup>96</sup>

The process of dismantling missiles was interesting. According to Miles, once the missile trains arrived in Dnipropetrovsk, the SS-19 missiles in their special canisters were transferred by a large overhead crane from the railcars to a holding yard. Then, single SS-19 missiles were moved on rails into the building, where they were placed into a special chamber. Using hot water, steam and nitrogen, the missile skin

was neutralized of its residual heptyl gases. Following testing for any toxic gases, technicians drilled holes in the missile motors in accordance with START's elimination protocols. Next, they moved the purged SS-19 missile to a holding area outside, where it sat until treaty inspectors arrived from the United States to verify the missiles had been destroyed in accordance with the treaty. Following that inspection, the missiles were dismantled, the motors cut up into scrap, the missiles' metal skin shredded and precious metals removed. All scrap and metal pieces were collected and sent to Ukrainian facilities for processing and resale. When sold, proceeds went to finance construction of new apartments for the strategic rocket officers. Using this dismantlement process, Ukrainian facility workers were able to neutralize and destroy five to six missiles per month.<sup>97</sup> The final SS-19 missile was destroyed February 26, 1999. In 1998, Morrison-Knudson received another contract to renovate an adjacent building to neutralize and salvage 181 SS-19 missile aggregate block units. This work was completed by September 2000.<sup>98</sup>

### SS-19 missile complexes: eliminating the infrastructure and restoring the land

By design, the SS-19 was an operational weapon system in which the 130 fixed missile silos had been deployed in a widely dispersed pattern across hundreds of square kilometers of Ukraine countryside. Each regiment had 10

Table. 6-1. Missile Base Infrastructure Elimination

Year	Cabling Recovered (Kilometers)	Metal Scrap Recovered (Metric Tons)	Paraffin (Metric Tons)
1996	17,839	16,898	773
1997	17,920	16,623	497
1998	6,572	6,098	195
1999	9,193	8,513	238
2000	2,167	3,935	102
2001	2	3,306	95

Source: Report, 43<sup>rd</sup> Rocket Army, "Elimination of Strategic Offensive Weapons in Ukraine in the name of World Peace," 2002, Vinnitsa, Ukraine.

## With Courage and Persistence

SS-19 missile silos and each missile complex was linked via underground cables to an underground regimental launch control center. The regimental launch control centers were connected by thousands of kilometers of buried cables to all the other regimental launch control centers, to the missile division's command posts, and to the Strategic Rocket Forces command centers in Moscow. These underground cables were dug up, recovered and salvaged for resale. Additionally, in the Khmelnytsky and Pervomaysk missile divisions there were nuclear weapons storage sites and SS-19 liquid propellant handling areas, designated as unified fill facilities. Also, located at the 43<sup>rd</sup> Rocket Army's arsenal in Mikhaylenky were a number of non-deployed missiles, called training spares, and miscellaneous items of missile equipment that had never been used in the field. All these items: the cabling, storage sites, propellant handling, missile spares, unified fill facilities and other ancillary structures, were part of the SS-19 missile system's infrastructure.<sup>99</sup> In the basic CTR umbrella agreement, U.S. officials agreed to assist Ukraine eliminating the missile system's infrastructure, although the policy commitment was imprecise and somewhat undefined. If

the scope of the work was undefined, then American CTR officials working in Ukraine found these commitments fell into a category that one frustrated program manager described as a "daily discovery."<sup>100</sup> As program requirements increased substantially, some grew contentious.

One infrastructure requirement that was not contentious was digging up and recovering the thousands of kilometers of underground cabling. These cables linked the missiles to regimental, division, army, and strategic rocket force command posts. The 43<sup>rd</sup> Rocket Army also had hundreds of kilometers of communications cables and wires, as well as power cables to each of the 130 missile complexes and 13 missile command posts. Bechtel was responsible for planning, organizing and managing all work associated with eliminating these cables and electronic wires. The 43<sup>rd</sup> Rocket Army compiled annual statistics on cables recovered and metal scrap salvaged. They illustrate the scope of infrastructure needed to field and operate a modern strategic rocket army.

Restoration of the land where missile silos and buildings had been located became a matter of contention between



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Restoration work in SS-19 missile silo area

the two governments. U.S. CTR program officials agreed to technical remediation, while Ukrainian governmental ministries wanted full scale agricultural-biological restoration. The cost differences were substantial. Among government ministries, the two sides developed different technical standards for measuring final remediation. These differences were expressed in a lengthy meeting in Kiev, and during 1996-1997 they grew to be substantial. Complicating negotiations was a new set of national environmental laws enacted by the Ukrainian Rada. These new laws required environmental impact assessments and gave environmental and agricultural ministries new powers to influence evolving national standards for remediation of former military sites. In the missile field restoration work was delayed for months. No work was done in 1996, and none in the first half of 1997. Not until September did the Ukrainian ministries agree to a new process for carrying out environmental surveys, testing, grading and remediation. Only after that could the American integrating contractor proceed to hire local contractors to do the work.

U.S. CTR construction equipment was used extensively on this project. During the fall 1997, Ukrainian subcontractors completed terrain restoration on 25 SS-19 missile silo complexes and two SS-19 launch control center sites. Each silo site was an approximately two-kilometer square area. During 1998, work accelerated considerably with terrain restored at 84 SS-19 silo sites and 9 launch control centers. In the final increment of restoration work, 20 silos and two launch control centers were completed in 1999. By that time there was sufficient trust and cooperation to establish that the methods of restoring the land at the SS-19 missile complexes would become a template for doing the same at the SS-24 missile sites.<sup>101</sup>

This point was not lost on anyone from either nation. Systems of cooperation were invented, coordinated, approved and implemented to eliminate the entire SS-19 missile force. These systems could also work for the next major project of eliminating the SS-24 missile forces. That major project awaited a decision by Ukraine's president and national security and defense council.



SS-24 ICBM on display

National Archives - Still Picture Branch

## Eliminating Ukraine's SS-24 missile force

The SS-24 ICBM was a cold-launched, solid-fuel rocket capable of delivering 10 nuclear warheads over intercontinental distances. The Soviet Strategic Rocket Forces (SRF) fielded 46 silo-based SS-24 missiles in the 43<sup>rd</sup> Rocket Army, starting in 1989. Potentially, each of the missile's 10 warheads had a yield of 550 kilotons. Their range was 10 to 11,000 kilometers, with estimated accuracy of within 500 meters. Known as the RS-22 or SS-24 Scalpel, this missile was the latest and most modern of all the SRF rockets. It was fielded in two versions: fixed silo-based and rail-mobile. Following collapse of the Soviet Union, the SS-24 missiles were located at missile bases in Ukraine at Pervomaysk (46) and in Russia at bases in Tatishchevo (10), Kostrama (12), Bershet (9) and Krasnoyarsk (12).<sup>102</sup>

All SS-24 missiles in Ukraine were fixed, silo-based missiles. The Russian bases had rail garrisons where they stored and maintained the missile trains. All these SS-24 missiles came under provisions of the START I Treaty. To meet



National Archives - Presidential Materials Division

Ukrainian President Leonid D. Kuchma and U.S. Vice President Albert A. Gore in Washington D.C., May 1997

treaty deadlines, Ukraine's missiles had to be eliminated by December 2001. However, since the SS-24 missile system had been designed and produced at the large Ukrainian missile design and manufacturing complex in Pavlograd, Ukraine's leaders were reluctant to order the missiles decommissioned and eliminated. In January 1994 President Kravchuk signed the Trilateral Agreement; however the next administration, Leonid Kuchma's government directed the Minister of Defense in 1994-1996 to keep the SS-24 missiles on alert. General Mikhtyuk and the 43<sup>rd</sup> Rocket Army complied, but by

January 1997 the success of the SS-19 silo eliminations and the promise of additional U.S. CTR elimination assistance, caused the government to reconsider its policy.

In early January 1997, a senior Ukrainian governmental committee from the Ministries of Foreign Affairs, Defense, Industrial Policy and Security Services recommended that any further delay in the political decision to deactivate the SS-24 missile complexes could have serious economic, ecological and political consequences.<sup>103</sup> Four months later, on May 10, 1997 President Kuchma and the National Security and Defense Council of Ukraine decided to decommission SS-24s.<sup>104</sup> The next week, Ukraine's president, defense and foreign ministers, and senior officials flew to Washington for a series of meetings with Vice President Gore, Secretary of Defense William Cohen and other senior cabinet secretaries. They were participating in the inaugural meeting of the U.S.-Ukraine Commission, known as the Gore-Kuchma commission. Modeled after the successful Gore-Chernomyrdin commission with senior cabinet ministers of the U.S. and Russia, this new commission met for two days in Washington, May 15-16. In the commission's joint statement, Vice President Gore declared the United States supported security assurances for Ukraine as stated in the NATO-Ukraine cooperation document. The U.S. had sponsored Ukraine's participation in NATO's Partnership for Peace program, it had supported and financed the forthcoming major NATO exercise in Lvov, and it appreciated Ukraine's "robust" participation in Bosnia in NATO's international peacekeeping operations.<sup>105</sup>

Three weeks before the Gore-Kuchma commission met in Washington, Secretary Cohen and Defense Minister Kuzmuk signed a document adding \$47 million in CTR assistance to Ukraine for SS-19 silo dismantlement projects.<sup>106</sup> Consequently in the commission's joint statement, Vice President Gore publicly acknowledged President Kuchma's decision to deactivate the SS-24 missile complexes, and he declared the U.S. would support that effort in the future. U.S. technical experts, Gore said, would travel to Kiev "as soon as possible" and begin planning with Ukrainian defense officials to carry out the initial SS-24 dismantlement projects.

In providing some perspective on this SS-24 commitment, Gore explained that the "scope and size" of the bilateral U.S.-Ukrainian defense and military cooperation programs was one of the largest in Europe.<sup>107</sup> The United States pledged to use its influence to support "full implementation" of

commitments made in the Trilateral Agreement of 1994, including commitments for compensation to Ukraine for the value of nuclear materials in the weapons withdrawn from Ukrainian territory. The day after the meeting, Kuchma and Gore met with President Clinton in the oval office. They discussed the range of security and economic issues taken up by the bilateral commission of ministers, and Clinton said he was “quite encouraged” by the number of cooperative programs. Clinton had signed the Trilateral Agreement he was a strong advocate of the Nunn-Lugar assistance programs. In fact, during the meeting, Clinton and Kuchma engaged in a discussion of technical details on how to dispose of the solid rocket fuel.<sup>108</sup>

These bilateral meetings, statements and commitments demonstrated that the relationship between Ukraine and the United States had changed decisively between 1994 and 1997. In January 1994, Ukraine’s government had been pushed and pulled into the Trilateral Agreement by a combination of a ruinous economy, strong-arm diplomacy, promises of American assistance, and Russian commitments of nuclear

fuel rods. Promises and commitments among nations were always subject to change, indeed many were never fulfilled. By May 1997, Ukraine’s economy was still weak, but major new assistance programs for eliminating strategic nuclear weapons had been developed, implemented, and were working. Russia was supplying Ukraine, as promised, the nuclear fuel rods for its electricity production. Ukraine, for its part, had withdrawn all its nuclear warheads, safely and securely, to Russia. Unanticipated, but welcome, was Ukraine’s participation in NATO – in its training and peacekeeping programs, and in joining its international peacekeeping forces in war-torn Bosnia. Instead of dealing exclusively with post-Soviet issues like inherited nuclear forces, collapse of its military-industrial complex, and the Black Sea Fleet, now the nation had engaged with the United States, European nations and NATO on a range of security, economic, and diplomatic issues and programs. For Ukraine, a reorientation was underway. Foreign security assistance programs, like cooperative threat reduction, were influencing Ukraine’s government and public as they sought a place in the region, Europe, and the world.



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SS-24 silo parts

Five weeks after the Washington meeting, President Kuchma signed a decree on July 5, 1997 assigning the defense and industrial policy ministries primary responsibility for planning, preparing and eliminating the SS-24 missile complexes.<sup>109</sup> From the beginning, Ukrainian and American defense officials acknowledged that dismantling and eliminating the SS-24s would be considerably different from the SS-19s. The two missile systems had major differences. First, the SS-24 was a solid-fuel rocket that had to be moved in a special canister inside a large missile transporter vehicle. The vehicle containing the missile was extremely heavy, weighing approximately 105 tons. Since their deployment in the late 1980s, these missiles had never been lifted out of their concrete silos. All maintenance on the missile had been performed in the silo. Consequently, Generals Mikhtyuk and Bushaev insisted the 43<sup>rd</sup> Rocket Army's heavy lifting cranes would need to be inspected, and possibly repaired. At the SS-

24 missile complex, the concrete foundation surrounding the silos would have to be inspected, and if weather damaged, repaired to handle the heavy cranes. Also, roads to and from the silos and the missile base would have to be inspected and repaired, with numerous bridges and culverts reinforced.

Since there was no existing facility in Ukraine to disassemble and destroy the SS-24s, General Mikhtyuk indicated that new temporary missile storage facilities would have to be constructed at the missile division's headquarters. Last but hardly least, Mikhtyuk said two new facilities in Pavlograd would have to be constructed and equipped: a new SS-24 disassembly and storage facility and a new SS-24 solid-propellant disposition facility. Complicating the entire complex program was the fact that Russia's Strategic Rocket Forces retained SS-24 missiles in its inventory. By international agreement between Ukraine and Russia, the missile system and its technologies and operating processes were classified.



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ICBM and Silo Elimination process

**Table 6-2. Major SS-24 Elimination and Disposal Projects**

**SS-24 Silo Elimination** - Provide integrating contractor, equipment and services to assist in removing and transporting missiles, and to dismantle and restore 46 silos and five launch control centers, and the infrastructure.

**SS-24 Temporary Missile Storage** - Provide integrating contractor, equipment, and services for constructing storage facilities at Mikhailenki and Pervomaysk.

**SS-24 Disassembly and Storage Facility** – Provide integrating contractor to prepare a facility in Pavlograd, develop procedures, and carry out disassembly and storage of the SS-24 missiles.

**SS-24 Solid Propellant Disposal** – Provide integrating contractor to design, manage and operate facilities, equipment, services to remove and dispose of propellants from 55 first stages, 54 second stages, and 54 third stages.

*Source: "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002. See chapter 3, page 21-24.*

No Americans could work directly on classified systems or technical equipment. Therefore, planning and defining all work to eliminate the SS-24 missiles, silos, and infrastructure required months of negotiations and discussions in Ukraine and the United States to flesh out specific requirements, equipment and projected scope of work for the American integrating contract.<sup>110</sup>

From July through December 1997, General Mikhtyuk and ministry officials hammered out issues with U.S. CTR officials, especially Jim Reid, John Connell, Doug Norman, Roland Lajoie and Harold Smith. They focused on what would be the scope of work in eliminating the SS-24 missile complexes, what the U.S. CTR program would support, and what would be the role of Ukrainian subcontractors. In dozens of intense meetings from Kiev to Pavlograd, the two sides worked out virtually all requirements for decommissioning, dismantling, transporting and eliminating the SS-24 missile system. By December 1997, the United States had committed to financing and carrying out four major SS-24 projects.<sup>111</sup>

In the SS-24 silo elimination program the first contract went to Bechtel Corporation in September 1997. Like the earlier SS-19 silo elimination contract, this one designated Bechtel as the integrating contractor. That meant it had responsibility for the project's planning and management, its systems engineering, infrastructure repair and maintenance, decommissioning support to the 43<sup>rd</sup> Rocket Army, managing the environmental review process, silo and site dismantlement, site restoration, equipment maintenance and repair, railroad rolling stock repair and maintenance, and training.<sup>112</sup> American equipment, the

bulldozers, cranes, graders, plasma cutters and dump trucks, used in dismantling and restoration of the SS-19 missile complexes would be transferred to the SS-24 silo elimination program. Planning began in the fall and winter of 1997-1998. In June 1998, Bechtel was awarded the main contract for SS-24 silo eliminations. Since the 46 missiles were located in five regiments assigned to the 46<sup>th</sup> Rocket Division, with its headquarters in Pervomaysk, Bechtel's project managers established their offices in a series of trailers not far from the base.

Major General Oleksander Iliashov commanded the 46<sup>th</sup> Rocket Division, which once had 5,500 men. Although by 1997 the rocket division was much reduced, General Iliashov directed his planning staff to organize and carry out the work of decommissioning the SS-24 missile complexes. General Mikhtyuk directed that the work begin in July 1998. It did, and over the next three years, 1998-2001, all 46 SS-24 missiles were decommissioned and removed from missile complexes by 43<sup>rd</sup> Army technicians and Ukrainian contractors. General Bushaev and his engineering teams worked at every missile extraction. The rocket army used its own equipment to lift the missiles in their canisters out of the silos. Missiles and canisters were then placed on large military trucks, called missile transporters, and driven in military convoys to new temporary storage facilities, built with CTR funding, at Pervomaysk and Mikhailenki.

Since the SS-24 missiles and canisters were extremely heavy, each weighing more than 105 tons, the roads leading from the silos to the missile base had to be inspected and repaired, with numerous bridges and culverts reinforced.



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Elimination work of SS-24 silo in Ukraine

Some of the missile sites were quite remote, more than 75 kilometers from the missile base. Special permits for the missile convoys traversing the roads had to be obtained from local provinces. Rocket army personnel moved the missiles in military road convoys from the missile complexes to new storage garages. Bechtel, using its subcontractors, assisted with road inspections, repairs and permits. Working with General Iliashov and his military division's planners, Gene Hicks, Bechtel's project manager, planned, scheduled and carried out elimination of the SS-24 silos over the summer of 1998, in accordance with START I. Using Ukrainian subcontractors extensively, the first SS-24 missile complex was eliminated in September 1998.<sup>113</sup>

During the next three years, Bechtel project managers worked closely with General Iliashov and the 43<sup>rd</sup> Rocket Army as all 46 SS-24 missile silos and five launch control centers were dismantled, destroyed, made available for treaty inspectors. The land was then restored through remediation.<sup>114</sup>

During that time civil engineers and local construction firms repaired roads, rebuilt bridges and culverts, and railroad track beds. By December 2002 all missile complexes had been remediated. New temporary storage garages for missile and rocket motors were built at the 46<sup>th</sup> Missile Division's base in Pervomaysk and at the 43<sup>rd</sup> Rocket Army's arsenal at Mikhailiyenki. In September 1997, Morrison-Knudson was selected as the integrating contractor for construction of new storage garages, responsible for project management, systems engineering, planning, environmental review, subcontractor training, equipment and maintenance.<sup>115</sup>

Ukrainian subcontractors -- Yulia Company, Stroom-RITIE Company, United Engineering Company, and others, did the actual work building storage garages, building and grading approach roads and preparing the surrounding site areas. They built storage garages for four SS-24 missiles at Pervomaysk by June 1998, and garages for 16 SS-24s at Mikhailiyenki Arsenal by December 1998.<sup>116</sup> Morrison-Knudson received a subsequent competitive-bid contract to build additional garages to store 16 SS-24 missiles at the same arsenal. That project was completed in July 2000, again using local contractors.<sup>117</sup> Virtually every aspect of these SS-24 projects, the silo eliminations, road and rail repairs, temporary storage facilities and site remediation worked well. Project costs, schedules, performance, coordination, cooperation, and delivery met or exceeded projections. In the U.S., retired Brigadier General Thomas E. Kuenning Jr., new director of the CTR program, characterized the SS-24 program in Ukraine as CTR's "model project."<sup>118</sup>

General Iliashov agreed. He thought the work was done professionally, and that the U.S. government's commitment to build housing for the displaced strategic rocket officers had a long-lasting positive influence.<sup>119</sup> Like Major General Bushaev, General Iliashov had high standards as a career rocket army officer, but he singled out the U.S. program managers for their respect, compassion and willingness to solve problems such as housing and heating, that influenced the lives of rocket officers and their families after the missiles were gone. Gene Hicks, Bechtel's project manager working with Ukrainian subcontractors in the missile fields, saw the lasting influence of American business methods and practices. Bechtel had more than 200 subcontracting firms working on multiple projects.<sup>120</sup> These subcontractors needed special skills and licenses for the sensitive work involved, and they had to meet criteria consistent with U.S.

law and the program's umbrella agreements. Stroom, one of the largest Ukrainian firms, had 60 separate contracts with Bechtel and Morrison-Knudsen.<sup>121</sup>

Hicks estimated that on any one day there were 250-300 men dismantling the SS-24 missile complexes and another 400-500 repairing roads and railroads across the country. During the summer, that number increased by another 200-300 people.<sup>122</sup> Consequently, the American project manager indicated that during peak construction months the workforce was between 850 and 1,100 men. Wayne Holcombe, Morrison-Knudsen's program manager, estimated the number of workers building the storage garages was approximately 500 men. On other contracts, workers from local firms dug up more than 1,000 kilometers of buried cables and bundled everything for resale. During 1999 approximately, 8,500 metric tons of steel were separated, bundled and reprocessed for resale. In the SS-24 project's four years, Ukrainian subcontractors repaired 450 kilometers of roads, 71 bridges, 1,173 kilometers of railroad lines and 99 rail switches.<sup>123</sup>

"Our subcontractors," Hicks said, "learned to do business the western way – safety, quality and schedule."<sup>124</sup> Oleg Blonar, Stroom's director, agreed: "I think it was a wonderful business school for us ... Our views regarding safety, personnel safety and environmental protection changed dramatically as a result of our work with the U.S. companies."<sup>125</sup> Stroom grew from 50 to 60 workers on its first SS-19 contract, to more than 400 during the SS-24 silo elimination, road and rail repairs, and storage garage construction work. When the work was completed in 2002, Bechtel, Morrison-Knudsen, and the Ukrainian subcontracting firms had amassed more than two million accident free man-hours. Holcombe, Morrison-Knudsen's program manager had three major construction projects underway simultaneously in Pervomaysk, Mikhailenki and Pavlograd. He credited three parties for completing the job quickly and safely: Ukrainian firms like Stroom, for their construction skills, hard work and ability to meet schedules and deadlines; General Mikhtyuk who acted decisively in resolving bureaucratic delays and local issues; and the American CTR program and project managers for their flexibility and responsiveness.<sup>126</sup>

To some people this judgment might appear biased, however Holcombe had years of experience working on other large-scale international projects for the American government. He credited CTR managers, John Connell, Mary

Ann Miles, and contract specialists, Ed Archer and Herbert Thompson, for their detailed knowledge of each program and their flexibility. Most significantly, he also credited their responsiveness to requests for changes, glitches, and intractable problems that arise in every large project. Project managers traveled from Washington to Ukraine once every four to five weeks, checking on every project and contract, meeting with the Ukrainian counterparts and remaining in country for 7-10 days.<sup>127</sup> In Washington they were in constant contact with American contractors in the field.

To cite just one example of many, Holcombe recalled that the initial contract for constructing SS-24 storage garages at the Mikhailenki Arsenal stipulated they would be built in accordance to a pre-existing design. When he went to the arsenal to discuss a tentative construction schedule, he learned there were no designs at all. Contacting Miles, the project manager in Washington, Holcombe got verbal approval to include in the contract an immediate provision for designing the storage garages. It was Christmas Eve.<sup>128</sup> Gene Hicks, Bechtel's hard-bitten, ex-pipefitter, and now the SS-24 silo project manager, agreed with Holcombe's assessment, saying he had never experienced such flexibility in a government-managed project. Hicks thought eliminating all the 43<sup>rd</sup> Rocket Army's missile systems through U.S.-Ukrainian cooperation was significant for two other reasons. First, it demonstrated it was possible to safely eliminate all "the weapons of mass destruction from a country." But equally important to Hicks was the "assistance and training provided through that program to the Ukrainian people. Not the bureaucrats, but the everyday man and woman on the streets."<sup>129</sup>

## **SS-24 disassembly and new storage facility in Pavlograd**

During 1998, Ukraine's Ministry of Defense informed the U.S. CTR program managers that the new SS-24 Disassembly Facility would be built in Pavlograd. Located in eastern Ukraine, this formerly secret city was home to the nation's largest missile design and production complex. The SS-24 missiles had been manufactured in the Pavlograd missile factories. Morrison-Knudson won the initial contract in September 1997, as well as a subsequent one in 1999, to renovate and equip an unused factory for disassembling the solid rockets. The Ministries of Defense



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SS-24 disassembly facility, Pavlograd, Ukraine

and Industrial Policy identified the Pavlograd Chemical Plant and the Pavlograd Mechanical Plant as the industrial enterprises that would work with the American contractor in developing the disassembly procedures.<sup>130</sup> Essentially, the missiles would be separated into three sections of rocket motors, and then stored in a secure and environmentally safe area. The actual facility work was straightforward, renovating an existing factory building structurally, adding fire suppressions systems, sensors, alarms, and other safety equipment. Morrison-Knudsen contracted with local firms to carry out the renovations, install the new equipment and provide maintenance and infrastructure support.<sup>131</sup>

The main subcontract on the SS-24 disassembly project went to the Pavlograd Mechanical Plant directed by Alexander Romanov. The plant had manufactured SS-24 rocket motors, mixing and curing the highly explosive solid rocket fuel. It was highly technical, dangerous, secretive work. Romanov was the powerful director general of the huge missile manufacturing



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SS-24 ICBM stages in CTR storage facility, Pavlograd, Ukraine

plant; he refused to allow any Americans to observe the SS-24 missile disassembly process at any stage, citing the Ukrainian-Russian treaty agreement on restricting rocket technologies. Romanov's decision left the U.S. government's integrating contractor up in the air; it was paying for the SS-24 missile disassembly but not seeing any of the work. Under the CTR Umbrella Agreement, the United States had the right to conduct audits and examinations of any project performed within the nation. The contractor, Morrison-Knudsen had to honor that U.S. government commitment and it wanted to monitor the disassembly process for safety and liability concerns. After considerable discussion and delay, Wayne Holcombe, John Connell, and Alexander Romanov crafted an agreement, which was subsequently endorsed by senior officials in the U.S. and Ukraine. Morrison-Knudsen would subcontract with another Ukrainian firm in Pavlograd, the KBuznoy missile design institute, to examine the entire disassembly process and recommend specific points where the line could be stopped, secret materials covered, and the American contractor's representatives could enter the plant and observe if the work had been accomplished. In 1998, this agreement was signed by the directors of Yuzmash and Yuzhnoy, and the project manager for Morrison-Knudsen.<sup>132</sup>

The SS-24 program in Pavlograd was carried out in five separate CTR projects. First, the new SS-24 disassembly facility, described above, had been constructed inside the factory complex of the Pavlograd Mechanical Plant. Morrison-Knudsen, the integrating contractor for that project, received three separate contracts to manage the process of disassembling 53½ SS-24 missiles. These missiles included the 46 SS-24s that had been deployed in the field, then stored in the new temporary garages at the missile divisions and the repair armory, and finally shipped across country by rail to the new disassembly facility in Pavlograd. Included in the new facility were seven and a half missiles located in the Pavlograd Mechanical Plant; missiles that had never been sent to the field. Ukrainian subcontractors disassembled the first SS-24 missiles in 1998, and completed the final missile disassembly in 2002.<sup>133</sup>

All rocket motor stages were sent to the new disassembly and storage facility in Pavlograd. The next project, elimination of SS-24 missile components accountable under the START Treaty, required the integrating contractor to work with Pavlograd Mechanical Plant officials in designing a process to separate the items, transport them

to a separate building, then prepare that building for treaty inspectors who would be conducting their examination. Following examination by U.S. START Treaty inspectors, the SS-24 components were destroyed, with any valuable parts or metals salvaged for resale. This project involved renovating another factory building at the Pavlograd Mechanical Plant complex, the Component Elimination Facility. The integrating contractor, again Morrison-Knudsen, carried out the work through other contracts with a series of local Ukrainian firms.<sup>134</sup>

A third project involved renovating a Pavlograd Chemical Plant facility for receipt of the separated rocket motor cases, inspection and testing for safety. This project had numerous delays and interruptions. Morrison-Knudsen was awarded this contract, as well as a subsequent one, to design and renovate a large, environmentally controlled storage building to warehouse the SS-24 loaded motor cases. The rocket motors were sensitive to moisture, water and electrical sparks. Later, in June 1999 when there were major delays in planning and equipping the solid propellant disposal facility in Pavlograd, the contract was expanded to include construction of four new storage buildings to warehouse all the SS-24 rocket motor stages. Using a Ukrainian firm who manufactured prefabricated, fire retardant, aluminum buildings, Morrison-Knudsen purchased the prefabricated materials and contracted with local Ukrainian construction firms to erect four new storage buildings within the Pavlograd Chemical Plant complex. Following completion in 2001, 163 motor stages were warehoused in these new storage buildings. The U.S. anticipated the CTR program would fund the integrating contractor to operate and maintain these storage facilities until the SS-24 rocket motors could be eliminated in the new SS-24 Propellant Disposal Facility.<sup>135</sup>

Without a doubt, the most difficult project was designing, building, and initially operating the SS-24 Solid Propellant Disposal Facility in Pavlograd. From the first negotiations, Ukrainian and American policy and technical officials could not agree on the process for disposing of solid rocket fuels. Feasibility studies in 1996 and 1999 by the Ukrainian design bureau, Yuzhnoy, recommended using a high-pressure water washout process to remove the propellant from SS-24 rocket motors, and then an industrial process to convert the separated materials into explosive materials for resale to the commercial mining industry. The amount of propellant in each missile was substantial, approximately 100 metric

tons in the three rocket motor states. U.S. experts disagreed with Ukrainian feasibility studies, questioning the design bureau's recommended process technically and raising safety concerns. By this point, there were dozens of CTR-funded projects throughout Ukraine.

This one emerged in 1999-2000 as one of the most difficult. Numerous senior meetings between American and Ukrainian officials did not resolve the contentious issues. American CTR program managers in Washington consequently declared that the SS-24 propellant disposal facility was a high-risk program, and they adopted a three-phased approach. Phase I would be design of the facility,

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### SS-24 propellant disposal High risk program

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securing permits and licenses, testing the blasting agents to be used in the water-washout process, establishing safety margins, and testing the technical parameters of separating the four types of propellants used in the SS-24 rocket motors. Phase I also included constructing equipping and operating the pilot plant. In June 2000, Morrison-Knudsen, now Washington Group International, and the Thiokol Corporation were awarded sole-source contracts to carry out Phase I: constructing and operating a pilot plant for the SS-24 propellant disposal facility. From the beginning, the project was plagued by difficulties.<sup>136</sup>

Local provincial officials held up work permits. The directors of the Pavlograd Chemical Plant and Machinery Plant, who were the new pilot plant's principal Ukrainian subcontractors, demanded exorbitant wage rates for their skilled workers. In addition, there were delays in installing equipment and delays in getting access to the pilot plant. Once operations started, there were frequent work stoppages. Delays and stoppages eroded trust and cooperation; Schedules slipped. In February 2001, General Kuenning issued a stop work order, halting construction at the pilot plant. Two months later, the Ukrainian government changed its oversight of the chemical plant, placing the pilot plant under direction of the National Space Agency. Work resumed in May, only to be stopped again in November due to a series of unexplained delays and continuing problems.<sup>137</sup> By January 2002, construction of the pilot plant project was 14

months behind schedule. Six months later, in June 2002 an explosion in the Pavlograd Mechanical Plant injured four workers and sent glass fragments flying across the plant floor. The blast shattered windows up to five kilometers away.<sup>138</sup> Shut down for several months during the investigation, the pilot plant resumed operations and was working on a much delayed schedule by December 2002.

Then in the following spring, DOD policy officials conducted a major reexamination in of the entire CTR program. This review determined the Ukrainian SS-24 pilot plant was too risky and projected costs were too high to continue funding. A third point declared that since all SS-24 missile stages were housed in safe, secure storage facilities, the U.S. government did not see the separated rocket motors as a threat to nuclear proliferation. Consequently, the U.S. suspended funding for the SS-24 propellant disposal facility project and shifted the projected funds to other CTR projects.<sup>139</sup> Defense Department policy officials recommended the Ukrainian government consider destroying the loaded rocket motor stages through a process of open burning at a cost of approximately \$6 million, versus \$100 million for construction, equipping, testing and operation of a new fuel conversion plant. In Kiev, President Kuchma's government objected strongly, declaring they had agreed to separate the missiles based on the U.S. commitment to build and operate the conversion plant. The U.S. did not agree and the matter remained unresolved.<sup>140</sup>

### Elimination of non-deployed SS-19s, SS-17s, and the launch control centers

When Ukraine became a nation in 1991, it inherited one of the Soviet Union's foremost ICBM design and production complexes. By the mid-1990s, this large complex located in Pavlograd included the Pivdenne Design Bureau (formerly Yuzhnoy), which had designed the SS-24 and SS-18 missiles and systems, and the Pivdenmash Machine Building (formerly Yuzhmash), which manufactured a series of Soviet ICBMs, including the SS-19s, SS-24s and SS-18s. Located in the same complex were the Pavlograd Chemical Plant, Pavlograd Mechanical Plant and the Khartron Production Association, which produced the guidance systems. Thousands of workers, many of them skilled engineers and designers worked in the design and production complex. Since there were no orders for

the strategic rockets, rocket motors or guidance systems, senior managers of these huge enterprises turned their energies to designing and marketing a variety of missiles to be used in space launches for the commercial satellite industry. President Kuchma created the National Space Agency specifically to encourage and coordinate this national industrial capability internationally. Throughout the 1990s, the Ukrainian government tried to sell non-deployed strategic missiles, but with limited success.

It was in this context that the Ukrainian government asked the United States for assistance in 1997 to eliminate a small number of non-deployed SS-19 missiles and other ICBMs that had been manufactured, but never sent to the Strategic Rocket Forces. The work would be done in Pavlograd in the SS-19 neutralization and disassembly facility. In Washington, the CTR Policy Office recommended



ICBM missile stages slated for elimination, Pavlograd, Ukraine

that Congress approve the request based on the principle that eliminating the missiles would reduce the potential for proliferation of ICBM missile technologies. Congress agreed, and in September 1998 Morrison-Knudsen received a contract to eliminate up to 15 SS-19 non-deployed missiles, one SS-18 non-deployed missile, 15 SS-17s, seven SS-11s, and two launch control centers used for training. Ukraine's Ministry of Defense managed the actual elimination work, using local firms while the American contractor-provided equipment, logistics, maintenance, training and safety planning. The work took approximately two years, starting in November 1998 and concluding in November 2000.<sup>141</sup>

18 months later the Ukrainian government requested American CTR assistance again, this time to eliminate an

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additional 31 SS-19 non-deployed missiles. These SS-19s had been stored in a Pavlograd missile plant while the government tried to sell them to civilian corporations or an international consortium as space launch vehicles. Unsuccessful, they decided to eliminate the missiles, with U.S. assistance. Following the same decision and authorization process, the Defense Department awarded a small contract in May 2002 to Washington Group International, an investment group that had purchased the Morrison-Knudsen Corporation. The actual work on eliminating the SS-19 missiles was organized and supervised by the Ukrainian Ministry of Defense.<sup>142</sup> Upon a request from the government, the work was delayed. Then suddenly in October 2003, President Putin announced that Russia had purchased 30 SS-19 missiles from Ukraine.<sup>143</sup> U.S. officials were caught unaware. In his announcement, Putin said, in fact, the missiles were already in Russia, with the last shipment arriving in March 2003. According to the Russian president, Russia had purchased the 30 SS-19s for approximately \$50 million in cash or debt relief. The Russian Deputy Chief of Staff for the Strategic Rocket Forces said the SS-19 missiles would be functional through 2030.<sup>144</sup>

## Eliminating 43rd Rocket Army's Nuclear Weapons Storage areas

In June 1995 Gloria Duffy, U.S. Department of Defense, and General Kuzmuk, Ukrainian Minister of Defense, signed a \$10 million implementing agreement to eliminate infrastructure related to the strategic nuclear systems.<sup>145</sup> In Kiev, the defense ministry nominated specific projects such as elimination of intercontinental ballistic missiles facilities, or destruction and restoration of obsolete nuclear storage areas, and any items that had been used to directly support the operation of nuclear weapons. A year later, in June 1996, Secretary William Perry signed an amendment authorizing up to \$23.4 million for these projects.<sup>146</sup> By that time several projects had been nominated by Ministry of Defense officials and evaluated by the Defense Department's CTR program office. John Booker, CTR program manager and Major General V.N Bushaev, Ministry of Defense, and a small team, traveled to each site and determined the scope of work. In 1997, Bechtel won a competitive contract to be the integrating contractor for eliminating nuclear weapons storage areas at the missile division headquarters in Pervomaysk and Khmel'nitsky. The contract included deactivation of a

radioactive waste pit at Makariv. Bechtel's program manager, Kamran Alsani, contracted with scientists and engineers at the Central Design Institute in Kiev to perform pre-elimination baseline environmental and radiological surveys. They had conducted similar scientific surveys following SS-19 missile site eliminations and restoration. Scientists at the Kiev institute developed the methods for dismantling equipment and they ensured the work plan met Ukrainian environmental and safety standards.<sup>147</sup>

When the actual work began in late 1997, two officials, one from each nation provided managerial oversight. Booker, the U.S. government's CTR contract officer, worked closely with Colonel Igor Mityayev, the 43<sup>rd</sup> Rocket Army's program representative.<sup>148</sup> They traveled to each site, examined the processes for decontaminating and disassembling equipment, dismantling buildings, sealing bunkers, and carrying out technical restoration of weapon storage areas and a radioactive waste pit. As in virtually all CTR projects, Ukrainian subcontractors did the work at the site. Biweekly status and monthly cost performance reports provided Booker with the data to carry out managerial oversight and review. Booker contracted with the U.S. Army Center for Health Promotion and Preventive Medicine in Aberdeen, Maryland to provide technical support for assessing quality assurance. Colonel Mityayev reported directly to General Mikhtyuk, so the Ukrainian government had oversight on any issues or developments in these projects. In fact, there were few issues and the project was completed without incident. By June 2001 these nuclear weapons storage areas had been eliminated and the sites remediated.<sup>149</sup>

The second part to this infrastructure project was demilitarization of the SS-19 Unified Fill Facilities at Pervomaysk and Khmel'nitsky. These facilities had been built in 1994 using CTR funds and had provided temporary storage facilities for the liquid rocket fuel extracted from SS-19 missiles being removed from the missile complexes. From 1994 to 1998, the liquid heptyl and amyl fuels in these temporary storage facilities were loaded into large steel tanks and shipped via rail to a large national fuel storage depot in Shevchenko. In 1999 John Connell decided that an infrastructure elimination project should be initiated to inspect the now empty fuel storage tanks, repair them if necessary, neutralize them of any residual amyl, heptyl or sodium nitrate gases, and then disassemble the steel tanks, salvaging any pieces for resale. Securing approval

from Washington, Booker issued the request for proposals, received the bids, conducted evaluations and awarded the contract. Bechtel won the contract and subcontracted with local Ukrainian firms, Stroom and Yulia, who carried out the work from 1999 through 2001. The salvaged steel was sold and the proceeds returned to the Ministry of Defense. This project led to another infrastructure project: demilitarization and elimination of eight liquid missile storage facilities – essentially old toxic heptyl storage tanks, abandoned railroad tank cars and assorted ground sites where heptyl fuels had been stored. Booker secured approval for preliminary site surveys and environmental surveys in 2002. In 2003, however, U.S. Defense Department policy officials reexamined the entire CTR program and decided to cease funding this infrastructure project.<sup>150</sup>

In 2001, General Mikhtyuk, Deputy Minister of Defense for Eliminations, requested the United States consider a CTR project to neutralize and eliminate the infrastructure at the national nuclear warhead storage site located at the Raduga military base.<sup>151</sup> Decades before, the Soviet Union's Strategic Rocket Forces had constructed a large, secure base to store and maintain nuclear warheads and weapons in Ukraine. The Raduga site was quite large, 76.5 hectares, with 50 buildings and two massive nuclear storage bunkers. Connell and Booker defined the \$5 million project as assisting Ukraine to dismantle the national nuclear stockpile site by providing equipment, services and training. Following the usual process, a contract was awarded in 2002. Bechtel won the contract, and as the integrating contractor, employed Stroom and Ukrainian scientific firms and institutes to carry out the work. They completed dismantlement work at the Raduga site by 2004.<sup>152</sup> During that year, Ukraine provided a list of four additional former nuclear sites, located on military bases at Lutsk, Stryy, Khmelnytsky and Medzhibozh. These sites were quite small. Upon evaluation, CTR program managers considered only the site at Stryy as a valid project for assistance. For neutralization of the other sites, the U.S. offered Ukraine dismantlement equipment provided from Defense Department stocks, and some diesel fuel.<sup>153</sup>

### Eliminating Ukraine's Strategic Bombers and Air-Launched Cruise Missiles

"For a very long time, we were unable to figure out what to do with these aircraft," recalled Vladimir Horbulin, Secretary

of the National Security and Defense Council.<sup>154</sup> Ukraine had inherited 19 Tu-160 Tupolev bombers, 25 Tu-95MS Tupolev heavy bombers, and 1,068 air-launched cruise missiles. These were modern long-range aircraft, with sophisticated weapons. The Tupolev Tu-160 bomber was a modern, supersonic, swept-wing heavy bomber capable of flying intercontinental distances at high altitudes at speeds of 2,000km/hr or Mach 2, and launching up to 12 Kh-55 long-range cruise missiles and 12 Kh-15 shorter-range missiles. In design and performance, the Tu-160 was compared to the U.S. B-1B strategic bomber. As the Soviet Union's most modern strategic bomber force, the Soviet Air Force placed its first operational Tu-160 unit, the



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Tu-160 bomber

184<sup>th</sup> Regiment, 46<sup>th</sup> Air Army, at Priluki Air Base in Ukraine. A second unit, the 121<sup>st</sup> Guards Heavy Bomber Regiment (six Tu-160s) was based at Engels Air Base in Russia.<sup>155</sup> Following the devolution of the Soviet Union into 15 separate nations, the Russian Air Force kept the Tu-160 bomber regiment at Engels active, and had several other active regiments of Tu-95 heavy bombers in its long-range aviation service. For the Ukrainian Air Force and the government, the decision of what to do with the inherited Tu-160 and Tu-95 bombers was much more difficult.

According several sources, a single Tu-160 bomber was worth approximately \$300 million.<sup>156</sup> If Ukraine wanted to sell these aircraft there was only one buyer, Russia. Following signing of the Trilateral Agreement in Moscow in January 1994, Russian and Ukrainian officials conducted more than 20 rounds of meetings and negotiations over four years (1994-1998). They discussed terms for the bomber's sale, but there were no agreements. During protracted negotiations, Russian military experts traveled to Ukraine and went to Priluki

Air Base to make several inspections of the bombers. Their conclusions, reported in the press, found the condition of the strategic bombers was deteriorating.<sup>157</sup> When no deal could be negotiated, the government of Ukraine began discussions on eliminating the bombers, with U.S. CTR assistance. According to Horbulin, the strategic bombers were expensive to maintain, costing the Ukrainian Air Force approximately \$1.3 million annually.<sup>158</sup> Finally Ukraine acted. In December 1997, General Kuzmuk, Ukraine's Defense Minister, met with U.S. Secretary of Defense Cohen in Brussels at the annual NATO summit meeting. They signed a formal agreement stating that if Ukraine requested assistance to eliminate its strategic aviation complexes, the U.S. would send its experts to discuss the technical aspects of the project.<sup>159</sup> Within the Ukraine's Ministry of Defense, Air Force and National Security Council, the protracted negotiations with Russia had run out of time. Lieutenant Colonel Victor F. Kuzminskiy, a Ukrainian Air Force officer who had worked with the strategic bomber forces for years, described the situation:

They (strategic bombers) were still operational. Psychologically, the leadership of the MOD and the Air Force came to the realization that it was impractical for Ukraine to maintain and use the

Tu-160s and Tu-95s. Moreover, it didn't make any sense – these were strategic nuclear bombers, but the nuclear weapons had already been shipped to Russia. The aircraft were large and very expensive; their maintenance cost the state a small fortune. The Tu-160 had a fuel capacity of 171 metric tons. To fly it within Ukraine made no sense at all. It used a lot of fuel and a lot of expensive lubricants. We flew it less and less often until we finally stopped altogether.<sup>160</sup>

As promised, Secretary Cohen sent a large American delegation to Kiev in mid-January 1998. Led by Assistant Secretary of Defense Harold Smith, retired Brigadier General Thomas E. Kuenning, Jr., Colonel Jim Reid, John Connell, Doug Norman and others, they met with General Mikhtyuk, Lieutenant General Victor I. Strel'nikov, First Deputy Commander of the Ukrainian Air Force, Vladimir Horbulin, Secretary of the National Security and Defense Council, and representatives from Ukraine's defense and foreign ministries.

As the meeting opened, Smith announced the current leaders of the U.S. CTR program would be changing. Secretary of Defense Perry and Ash Carter had already



U.S. Secretary of Defense William Cohen and Ukrainian Minister of Defense General Oleksander Kuzmuk

National Archives - Still Picture Branch



Defense Threat Reduction Agency seal

resigned, returning to university positions. Smith said that he and General Lajoie, director of the CTR Program Office, would also be resigning in the coming months. General Kuenning would be heading the department's CTR program office and become the principle official for all U.S.-Ukraine assistance projects in the future. Further, Smith explained that the program office would be merged into a new Defense Department organization, the Defense Threat Reduction Agency, effective November 1, 1998. As an Air Force officer, Kuenning had served in the Strategic Air Command as an intercontinental ballistic missile officer, rising to command strategic missile wings and strategic air forces. As a senior military officer, Kuenning had international experience serving as the U.S. permanent representative to NATO and as the director of the U.S. arms control inspection organization, the On-Site Inspection Agency. Consequently, the general brought to the CTR program knowledge of strategic weapons systems, experience in NATO, familiarity with complex arms reduction treaties and experience dealing with military leaders of the region.<sup>161</sup>

With these announcements, Smith, General Kuenning, General Mikhtyuk and the delegations turned to discussions defining the elimination process for strategic bombers and cruise missiles. When these initial sessions, which lasted a week, proved successful, they were followed in February and March with more detailed technical discussions, visits to the air bases at Priluki, Uzin, the repair depot at Belaya Tserkov, and then issuance of the request for proposals to contractors in April. Simultaneously, Ukraine's Ministry

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of Defense developed and coordinated a comprehensive bomber elimination plan. President Kuchma signed a decree on May 14, 1998 authorizing the "Comprehensive Tu-95MS and Tu-160 Strategic Bomber Reduction and Elimination Program."<sup>162</sup> By June, bids for the CTR-funded bomber elimination project had been received, evaluated, and the contract awarded to an American firm, Raytheon Technical Services Company. The \$7 million contract made Raytheon the integrating contractor, responsible for planning, managing and coordinating with the Ukrainian Air Force and Ministry of Defense all aspects of the strategic bomber elimination program.<sup>163</sup>

The project stipulated the elimination of 44 bombers – 19 Tu-160s and 25 Tu-95MSs, and 1,068 air launched cruise missiles by December 2001. Working with Susan Malcolm, the U.S. government's contracting officer, Barret Haver, Raytheon's program manager in Ukraine, began hiring subcontractors in the summer 1998. To conduct the baseline environmental survey of the air bases and repair depot, Haver contracted with Professor Eduard Prokhach, Director of the Kharkiv Scientific Research Center on Military Ecology. Prokhach's team of environmental scientists surveyed the military bases and repair depot and concluded the primary sources of contamination were oil products and heavy metals. The surface areas at the air bases were not affected, but the ground water was significantly contaminated.

"People were drawing out nothing but kerosene from the wells," Prokhach recalled. Near the Uzin Air Base, when his team tried to take a sample from one of the wells, "the owner was against it, and the other residents came over and started protesting (at us). It turned out they took turns drawing kerosene from that well ... they were filling up their mopeds directly from it."<sup>164</sup> To stop this practice, Raytheon hired a local company to pump the wells dry, extracting the kerosene and selling it. Subsequent surveys by the Ukrainian Geology Institute of the National Academy of Sciences pointed to other areas that needed remediation. Also in the summer months, Ukrainian subcontractors, Stroom, BARZ and Ukrainian Air Transport Carrier, began preparing elimination areas for dismantling the bombers. Work proceeded quickly, and the first two Tu-160 bombers were eliminated in the fall of 1998.<sup>165</sup>

Two issues surfaced. First, the Ukrainian Air Force's detailed instructions for cutting the Tu-160 bomber into parts did not agree with the U.S. contracting officer's interpretation

of elimination protocols in the START Treaty. The treaty spelled out that the strategic bombers' fuselage had to be cut at specific points. Then the cuts and separated fuselage would be observed on-site by START Treaty inspection teams or satellite imagery. The Ukrainian Air Force insisted it was too expensive to meet those exacting requirements, so they planned to sever the bombers at four points and then have inspection teams determine if the bombers, with their fuselage severed through completely and wings cut off, could be certified as destroyed. When the American START Treaty inspection team arrived at Priluki, they examined the severed Tu-160 bomber, referred to the treaty's elimination protocols and declared that the cuts had not been made correctly.

The Ukrainian Air Force, however, did not relent from its position that in fact the bomber had been destroyed. The Air Force asked the Foreign Ministry to petition the international



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Elimination of Tu-160 bomber

START Treaty commission in Geneva to consider whether Ukraine's procedures for severing the strategic bombers would be acceptable in the future. In an exceptional decision, the START Treaty's commission modified the treaty's elimination protocols, accepting Ukraine's scheme for cutting the planes.<sup>166</sup> The second problem concerned the rate at which the Ukrainian Air Force released bombers to the American contractor to be destroyed. After the first two Tu-160 bombers, the pace slowed appreciably. For Raytheon, the project's schedule fell behind, first by weeks, then by months.<sup>167</sup> Unbeknownst to the American contractor, or to the CTR contracting officer, there was a subtext to the delay, one that was revealed in the summer of 1999.

In late July, General Kuzmuk, Minister of Defense, announced that Ukraine had offered to transfer to Russia

eight Tu-160 and three Tu-95 strategic bombers and an unspecified number of cruise missiles in return for partial debt relief for its natural gas bill of \$1.8 billion. Kuzmuk explained that Russia had pledged to convert the bombers to conventional weapons. According to Oleksander Chaliy, Ukrainian First Deputy Minister of Foreign Affairs, neither the transfer nor conversion of the bombers would violate the START Treaty. Negotiations on the specific price for the aircraft and missiles in the following months resulted in valuation of \$25 million per bomber and \$10 million for the air-launched missiles. In the final deal, concluded in November, Ukraine agreed to send 11 strategic bombers, eight Tu-160s and three Tu-95s, and 581 Kh-55 cruise missiles to Russia in return for a \$285 million reduction in Ukraine's natural gas debt. The first two Tu-160s flew from Priluki to Engels that month. Ukraine's remaining strategic bombers and missiles would be destroyed at Priluki, Uzim and Belaya Tserkov by the Ukrainian Air Force, working with Raytheon.<sup>168</sup>

For some Americans, Ukraine's sudden decision to transfer the bombers for debt relief was akin to poisoning the well with kerosene. It left a bitter taste. Minor issues turned into major disputes. When the Commander Kevin Bickell, U.S. CTR contracting officer, sought firm commitments on the number of bombers to be dismantled and eliminated, Ukrainian Ministry of Defense and Air Force officials were not forthcoming. General Kuenning wrote letters, made telephone calls and traveled to Kiev. U.S. Ambassador Steven F. Pifer had discussions with Defense Ministry officials. John Connell had frequent meetings with General Mikhtyuk. Stalled, the project fell further behind.

Consequently, when Major Don Parman became the new CTR program officer in late July 2000, he found the project mired in an acrimonious relationship, seriously behind schedule and unproductive. In Washington, he asked the American CTR country manager what exactly was his mission? Connell replied, "I want you to cut up airplanes. And I want you to cut up the weapons that go with them and help eliminate this threat. The sooner you do it, the better. And be on the lookout for other systems that fall in the same category."<sup>169</sup> When Parman returned to Ukraine he met with Air Force officials and learned they had been promised gasoline for their trucks, but it had later been denied because aircraft had not been released to the American contractors for dismantlement. As the CTR contracting officer, Parman authorized purchase and delivery of the fuel; one month

later the Ukrainian Air Force released several bombers to the contractor for elimination. Three months later the Air Force released a complete schedule for dismantling and eliminating all remaining bombers and missiles.<sup>170</sup>

All elimination work was done at Ukrainian air bases Priluki, Uzin and Belaya Tserkov. It went quickly. Within six months, Ukrainian subcontractors had dismantled and eliminated 11 Tu-160s, 27 Tu-95s and 483 Kh-55 air-



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CTR Project Manager Don Parman (c.)

launched cruise missiles. Jack Sajevic, Raytheon's new project manager, explained that decommissioning each bomber took three to four weeks, with Ukrainian subcontractors removing the jet engines, draining the hydraulic systems and removing all interior equipment.<sup>171</sup> Then, large cutting cranes gripped the fuselage and ripped through it, making the four cuts required by the START Treaty. The wings were then cut off. After two weeks, the period set aside for observation and inspection required by the START Treaty, the teams dismantled the aircraft completely, shredding the parts for any valuable metals and waste products. The entire process took 80 days for a single bomber. Normally, Raytheon's on-site manager would have subcontractor teams dismantling and cutting three or four aircraft simultaneously.

One of the Ukrainian firms, Ukraine Cargo Airlines, received a contract from Raytheon to dismantle both the Tu-160 and Tu-92MS bombers. Led by a senior engineer, the Ukrainian firm hired more than 150 machinists, engineers and technicians, many of them former Ukrainian Air Force officers to carry out the work.<sup>172</sup> This same firm also had contracts with the Air Force, removing sensitive and secret systems prior to the aircraft being released to the American contractor. The firm's president, Andre Kukin recalled that they had more

than 10 separate contracts to liquidate the bombers, aircraft engines and cruise missiles. Following this work, Kukin explained that his company, Ukraine Cargo Airlines, bid and received contracts from the United Nations and the European Union to fly cargo and materials to Africa on humanitarian missions.<sup>173</sup> During the bomber eliminations, Ukrainian Air Force personnel were always present. Lieutenant Colonel Victor Kuzminskiy served as the service's senior staff officer on the project. He remembered the day when they eliminated the first Tu-160 strategic bomber: "Let me tell you – as an aviator, it made me ill. Each time I left the air base, I had chest pains for several days afterward."<sup>174</sup>

While the Tu-160 and Tu-95 strategic bombers were being eliminated, the Ukrainian Air Force asked U.S. officials if they would consider dismantling and eliminating excess Tu-22M Backfire bombers and air-to-surface missiles. In late October 2000, General Kuzmuk had requested assistance for the project from Secretary Cohen.<sup>175</sup> Receiving copies of the request, Connell and General Kuenning approached Jim Reid, Director, CTR Policy Office, with a question: Could the CTR program support this request? The question had a policy dimension. In negotiating the START Treaty, had the Tu-22 Backfire bomber been defined as a Soviet strategic bomber and subject to elimination? If it was, it would be eligible for CTR assistance. Reid and his staff determined, following research into the treaty negotiating record, that this version of the bomber, the Tu-22M equipped with Kh-22 nuclear air-to-surface missiles, had sufficient range to threaten U.S. naval vessels and consequently should be considered as a strategic heavy bomber. In December 2000 following Reid's briefing, Secretary of Defense Cohen decided to support the project, directing Reid to notify Congress that existing CTR funds would be reprogrammed to fund the Tu-22 bomber and air-to-surface missile eliminations in Ukraine.

As a consequence, the scope of the strategic bomber project with Ukraine expanded to include dismantlement and elimination of up to 40 Tu-44 Backfire bombers and 230 Kh-22 nuclear capable air-to-surface-missiles. Initially, Raytheon's contract was modified to include planning a process to eliminate eight aircraft and five missiles along with their existing strategic bomber elimination work. Then, after an open competition, Raytheon received a contract July 2002 to plan and manage the elimination and disposal of the remaining 32 Tu-22M bombers and 225 Kh-22 air-to-surface missiles. This project supported the elimination of weapons

systems located at military bases throughout Ukraine: Uzin, Priluki, Belaya Tserkov, Ozernoye, Poltava and Nikolaev. Using many of the same Ukrainian firms, the work proceeded without incident, ending with the final bomber elimination in December 2003. START Treaty inspectors or satellites confirmed the bombers had been eliminated in accordance with treaty protocols. Major Parman, the CTR program officer, certified the elimination of the air to surface missiles.<sup>176</sup>

## Winding down, amidst new initiatives

Elimination of the Tu-22 bombers and the missiles was the last major strategic nuclear arms elimination project in Ukraine. By 2003-2004 Commander Mike Johnson was the CTR program manager for all projects in Ukraine, Kazakhstan and Belarus. Johnson's portfolio included overseeing the final work in Ukraine, specifically the projects for eliminating the

non-deployed missiles, maintaining continuous operations and security at the SS-24 storage warehouses, terminating and transferring the SS-24 Pilot Plant equipment, and completing all Tu-22 bomber eliminations. When the SS-24 Propellant Disposition Facility's Pilot Plant was cancelled in 2004, it meant that operation of the SS-24 storage warehouses under a CTR contract of \$95 million annually was the only continuing active strategic nuclear arms elimination project.<sup>177</sup> In addition, Commander Johnson worked with John Booker and Major Craig Martelle to wrap up the small, scattered projects in the weapons of mass destruction infrastructure elimination program.<sup>178</sup>

Martelle initiated a small project that established a joint U.S.-Ukrainian team to conduct a survey of the existing CTR-furnished equipment that had been used by American, Ukrainian and MOD contractors in all the elimination projects and to recommend disposition. Using the CTR



Defense Threat Reduction Agency

Elimination of cruise missile, Ukraine

Logistics Support manager's records and policy direction, the joint team recommended transferring 317 equipment items to current CTR projects in Russia, including 10,000 liters of detselene fuel mixture. They transferred five vehicles and 100 office and furniture items to the Defense Department's new WMD-Proliferation Prevention Initiative's Border Guard program in Ukraine. Some equipment and other items went to two projects in Pavlograd: the SS-24 Pilot Plant program and the SS-24 Missile Disassembly, Storage and Elimination facility. The joint team also recommended that other CTR equipment, including computer equipment, laboratory spare parts, a mobile shelter, shipping containers, light vehicles and 363 metric tons of fuel, be transferred to Ukraine's Ministry of Defense. General Kuenning, CTR Director, accepted all the team's recommendations and directed the program managers to follow through with the transfers.<sup>179</sup>

Two new programs in Ukraine supported by CTR funds were the Defense Department's WMD-Proliferation Prevention Initiative and the Biological Weapons Threat Agent Detection and Response program. President Bush's administration had initiated an array of new programs after 9-11 as part of its global war on terrorism. Robert Joseph, a senior official in the National Security Council, developed a concept for a multinational nonproliferation initiative that would be led by the United States, but would be consistent with each participating nation's laws and courts and all existing international treaties and regimes. President Bush announced the Proliferation Security Initiative in Krakow, Poland in May 2003. Within two and a half years, 70 nations had enlisted in the new proliferation prevention program.<sup>180</sup> Under this multinational program, Defense Department policy experts developed new CTR programs with Kazakhstan, Azerbaijan, Uzbekistan and Ukraine to prevent transit across these nations of any WMD-related materials by terrorist groups or rogue states.<sup>181</sup>

Two years before the president's announcement, U.S. Defense Department and Ukrainian Ministry of Economy and European Integration officials had signed in 2001 an implementing agreement establishing an export control system to detect and prevent transport out of Ukraine any materials or weapons of mass destruction. In Washington, CTR program managers, working with Ukrainian officials, used that legal agreement to develop a comprehensive five-year plan that would be operational by 2005. It would give the Ukraine government equipment and training to develop

the capability to detect and interdict any WMD materials transiting the nation's border with Moldova. In subsequent years the program would expand to cover maritime proliferation prevention on Ukraine's borders with the Black Sea. Mark West, CTR program manager, estimated the new program's five-year cost at \$53.8 million.<sup>182</sup>

In the second new initiative, the BW Threat Agent Detection and Response (TADR) program, U.S. Defense Department officials discussed and planned a series of new cooperative projects with the Ukrainian Ministry of Health. These programs would assist the government's capability to discover if harmful biological materials had been diverted, or accidentally released, from the nation's biological laboratories and institutes. The new programs, equipment and procedures would detect dangerous pathogens and establish national response networks. In 2005, Ukraine and American officials signed an implementing agreement, and program managers in both nations began defining specific requirements for new projects.<sup>183</sup>



U.S. and Ukrainian leaders participate in ICBM silo elimination

Defense Threat Reduction Agency

## Ukraine disbands the 43rd Rocket Army

Disbanding the 43<sup>rd</sup> Rocket Army was a historic occasion. On August 20, 2002, dignitaries from many nations gathered at the army's headquarters in Vinnitsa, Ukraine. Established in 1960, the rocket army was one of the largest and most decorated in the Soviet Strategic Rocket Forces. General Mikhtyuk commanded the rocket army from 1991-2001, the longest tenure of the army's nine commanding generals. Amidst the history, heraldry and honors that day, there emerged from the international audience of generals, military officers and civilians a deep appreciation for the leadership, courage and integrity of General Mikhtyuk. He was retiring that day, along with the rocket army. As he ended his long service, only a few knew the entire story of Ukraine's decision to dismantle and eliminate the 43<sup>rd</sup> Rocket Army, but everyone knew that the 43<sup>rd</sup> Rocket Army's commanding general had influenced the course of Ukraine's modern history. Ukraine had given up its inherited strategic rocket army and nuclear weapons, the United States had contributed \$471 million in assistance, Russia had provided \$5 billion in fuel rods and gas credits, but it was General Mikhtyuk who had planned and supervised every element of the rocket army's decommissioning, dismantlement, destruction and disbandment. It took eight years. Summarizing his role, General Mikhtyuk declared tersely: "It was difficult, sometimes disappointing work, which took a lot of time and effort. But it was necessary."<sup>184</sup>

### Endnotes

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<sup>1</sup> The exact terms of President Yeltsin's commitments to Ukraine were contained in one of the six secret annexes to the Trilateral Agreement, January 14, 1994. For the influence of the U.S.-Russian HEU Agreement on the Trilateral Agreement see, James E. Goodby, "Testing the Utility of Nuclear Restraints After the Cold War," in *Europe Undivided*, (Washington, D.C., 1998), pp 65-91. See also, Richard A. Falkenrath, "The HEU Deal and the U.S. Enrichment Corporation," *The Nonproliferation Review* (Winter 1996), pp 62-66, and Nuclear Threat Initiative, "Russia: Overview of the U.S.-Russia HEU-LEU Program," [www.nti.org/db/nisprofs/russia](http://www.nti.org/db/nisprofs/russia)

<sup>2</sup> Report, General-Colonel Vladimir Alexeyevich Mikhtyuk, Commander, 43<sup>rd</sup> Rocket Army, Strategic Rocket Forces, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Vinnitsa, Ukraine, 2003, report located at DTRA.. See Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998." pp. 1-35

<sup>3</sup> The last increment of more than 1,800 warheads was shipped from Ukraine to Russia on May 31, 1996. See "Kuchma Issues Statement on Removal of Nuclear Weapons" UT 1 Television, June 1, 1996 in *FIBS-SOV-96*, June 5, 1996.

<sup>4</sup> "Nuclear Power in Ukraine," *World Nuclear Association*, August 2005, [www.world-nuclear.org/info](http://www.world-nuclear.org/info)

<sup>5</sup> See Interview with Mr. Volodymyr P. Horbulin, Assistant to the President of Ukraine on National Security, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, in Kyiv, Ukraine, 15 March 2003.

<sup>6</sup> Strobe Talbott, *The Russia Hand, A Memoir of Presidential Diplomacy*, (New York, 2002) p. 113.

<sup>7</sup> As documented in Chapter 5, Secretary Perry went to Ukraine four times in 1994-1995, and throughout his tenure as Secretary of Defense he followed closely the implementation of the CTR program in Ukraine. For his direct experiences in Ukraine, see Ashton B. Carter and William J. Perry, *Preventive Defense* (Washington, D.C., 1999), pp 1-19. Vice-President Gore led the senior-level bilateral commission, known as the Gore-Kuchma Commission. For the commission's joint statements on nonproliferation and other topics see, "U.S.- Ukraine Binational Commission, Joint Statement of Plenary Session," May 16, 1997 and "Joint Statement: Second Plenary Session, 22 July, 1998," in *Nuclear Threat Initiative, Ukraine Profile*, [www.nti.org/e\\_research/profiles/Ukraine](http://www.nti.org/e_research/profiles/Ukraine).

<sup>8</sup> "West Gives Ukraine \$234 Million in New Arms Aid," *Reuters*, November 11, 1994, cited in Mark D. Skootsky, An Annotated Chronology of Post Soviet Nuclear Disarmament 1991-1994, in *The Nonproliferation Review*, Spring/Summer 1995; Dr. William J. Perry, Secretary of Defense, Keynote Address, 1995 Industrial College of the Armed Forces Conference, "Building Industrial Partnerships in the Former Soviet Union," *Proceedings*, pp. 21-26. See also, *Defense Dialog*, "Remarks by Secretary of Defense William J. Perry," April 19, 1995.

<sup>9</sup> In the first five years there were a series of critical GAO reports. See, United States General Accounting Office, "Weapons of Mass Destruction: Reducing the Threat from the Former Soviet Union," October 1994, GAO/NSIAD-95-7; and U.S. General Accounting Office, "Weapons of Mass Destruction: Status of the Cooperative Threat Reduction Program," September 1996, GAO/NSIAD-96-222. In addition, the Congressional Research Service (CRS) of the Library of Congress developed a series of analytical reports on the CTR program. See, Amy F. Wolf, "Arms Control and Disarmament: A Catalog of Recent Activities, January 4, 1995.

<sup>10</sup> Joseph D. Ellis, *Defense By Other Means, The Politics of US-NIS Threat Reduction and Nuclear Security Cooperation*, pp84-88;

## With Courage and Persistence

For insights on how the Defense Department worked to meet Congressional demands in the mid-1990s see, Interview Colonel Bob Dickey, Deputy Chief, Cooperative Threat Reduction Directorate, DTRA, Washington, D.C., May 26, 2000; Interview, Ms. Laura S.H. Holgate, Vice President for Russia and NIS Programs, Nuclear Threat Initiative, Washington, D.C., June 20, 2002; Interview, Dr. Harold P. Smith, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs, 1993-1998, Washington, D.C., December 14, 2001. All interviews with the author.

<sup>11</sup> Senator Sam Nunn, "Changing Threats in the Cost-Cold War World," in John S. Shields and William C. Potter, eds., *Dismantling the Cold War*, p. xii.

<sup>12</sup> Ashton B. Carter and William J. Perry, *Preventive Defense: A New Security Strategy for America*, pp. 1-20, 65-91, Joseph D. Ellis, *Defense By Other Means*, pp.100-122.

<sup>13</sup> *Izvestiya*, 29 June 1993, in *FBIS-SU*, 29 June 1993; *Izvestiya*, 16 July 1993 in *FBIS-SU*, 16 July 1993.

<sup>14</sup> General Colonel (retired) Mikhtyuk, V.A., Commander 43<sup>rd</sup> Rocket Army, Report: "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, "Status, Issues and Changes in the 43<sup>rd</sup> Rocket army during 1993-1994," pp. 12-13.

<sup>15</sup> For the SS-19 configurations and technical specifications see, Federation of American Scientists, "UR-100N/ SS-19 STILLETO," in [www.fas.org/nuke/guide/russia/icbm](http://www.fas.org/nuke/guide/russia/icbm)

<sup>16</sup> Interview, Colonel General V.A. Mikhtyuk, Commander 43<sup>rd</sup> Rocket Army, and Deputy Minister of Defense, Republic of Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Vinnitsa, Ukraine, February 25, 2002.

<sup>17</sup> General Mikhtyuk, Report: "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 2, "Status, Issues and Changes in the 43<sup>rd</sup> Rocket Army during 1993-1994," p 28.

<sup>18</sup> *Ibid*, p.29.

<sup>19</sup> Interview, Colonel Aleksandr I. Serdyuk, National Space Agency, Republic of Ukraine, Kyiv, Ukraine, February 7, 2002; ; Interview John Connell, Program Manager, CTR Directorate, Defense Threat Reduction Agency, Ft. Belvoir, Virginia, February 16, 2001; Interview Colonel Valeriy Mikitivich Blidar, Head, Analytical Branch, Strategic Forces Administrative Control Center, Ministry of Defense, Kyiv, Ukraine, June 3, 2003. All interviews with the author.

<sup>20</sup> Report, General Mikhtyuk, Report: Status of the 43<sup>rd</sup> Rocket Army, 1991-2002, Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998." pp 27-30.

<sup>21</sup> *Ibid*.

<sup>22</sup> *Ibid*.

<sup>23</sup> *Ibid*, pp28-29.

<sup>24</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998."

<sup>25</sup> Agreement between the Department of Defense of the United States of America and the Ministry of Defense of Ukraine

concerning the provision of material, services, and related training to Ukraine in connection with the elimination of Strategic Nuclear Arms, December 5, 1993. This was the first major CTR implementing agreement.

<sup>26</sup> Reports, ACIU, Kiev Weekly Activities Report, 13-19 February 1994, 20-26, 1994, 27 February-5 March 1994, 13-19 March 1994. These were internal reports sent from the U.S. Embassy, Kiev to Headquarters, On-Site Inspection Agency in Washington, D.C.

<sup>27</sup> DOD News Release, Office of the Assistant Secretary of Defense (Public Affairs), March 21, 1994. The new implementing agreement was: Agreement between the Department of Defense of the United States of America and the Ministry of Machine Building, Military-Industrial Complex and Conversion of Ukraine concerning the conversion of enterprises of the military-industrial complex, March 21, 1994.

<sup>28</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998," p.11-12.

<sup>29</sup> All of these developments cascaded into a litany of complaints against the U.S. government and the CTR program in the spring of 1995. See, Interview, Valery Nikolayevich Shmarov, Vice Premier of Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, June 6, 2002, Kiev, Ukraine; Interview with Mark Beha, CTR Country Manager for Raytheon Corporation, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Kiev, Ukraine, November 8, 2002; Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998."; Interview, Colonel General V. A. Mikhtyuk, Commander 43<sup>rd</sup> Rocket Army, and Deputy Minister of Defense, Republic of Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Vinnitsa, Ukraine, February 25, 2002; Interview with William G. Miller, U.S. Ambassador to Ukraine, 1993-1998, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Washington, D.C., February 1, 2006.

<sup>30</sup> Briefing, CTR Program Office, "Cooperative Threat Reduction (CTR) Program Review," May 20, 1997.

<sup>31</sup> Interview with Barrett Haver, CTR Program Manager, Raytheon Technical Services Company, Kiev, Ukraine, February 1, 2000.

<sup>32</sup> Interview with Mark Beha, CTR Country Manager for Raytheon Technical Services Company, Kiev, Ukraine, November 8, 2002; Interview John Connell, Program Manager, CTR Directorate, Defense Threat Reduction Agency, Ft. Belvoir, Virginia, February 16, 2001; and Interview with Barrett Haver, CTR Program Manager, Raytheon Technical Services Company, Kiev, Ukraine, February 1, 2000. All interviews conducted by the author.

<sup>33</sup> Interview with Mark Beha, CTR Country Manager for Raytheon Corporation, Kiev, Ukraine, November 8, 2002. Hughes Technical Services Company was acquired by Raytheon in 1997.

<sup>34</sup> Ibid. See also, Interview with Barrett Haver, CTR Program Manager, Raytheon Technical Services Company, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 1, 2000.

<sup>35</sup> Interview John Connell, Program Manager, CTR Directorate, Defense Threat Reduction Agency, Ft. Belvoir, Virginia, February 16, 2001, and Interview with Mark Beha, CTR Country Manager for Raytheon Corporation, Kiev, Ukraine, November 8, 2002. All interviews were with the author.

<sup>36</sup> Briefing, CTR Program Office, "Cooperative Threat Reduction (CTR) Program Review," May 20, 1997.

<sup>37</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998"; Interview with J. Randall Regan, CTR Country Manager, Bechtel Corporation, Kiev, Ukraine, January 31, 2000; Interview with Gene Hicks, Bechtel SS-24 Silo Dismantlement Project Manager, Pervomaysk, Ukraine, February 26, 2002.

<sup>38</sup> Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of Ukraine Concerning Cooperation in the Elimination of Infrastructure for Weapons of Mass Destruction through Provision to Ukraine of Material, Services, and Related Training, June 27, 1995, Kiev, Ukraine.

<sup>39</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998," p. 7.

<sup>40</sup> Interview with J. Randall Regan, CTR Country Manager, Bechtel Corporation, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, January 31, 2000.

<sup>41</sup> Ibid.

<sup>42</sup> This evaluation of Connell emerges from the interviews with senior Ukrainian, American, and contractors. All saw Connell as one of the key figures from 1994-2002.

<sup>43</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998," p 33. See also, Interview, Ms. Laura S.H. Holgate, Vice President for Russia and NIS Programs, Nuclear Threat Initiative, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Washington, D.C., June 20, 2002.

<sup>44</sup> Interview with Major General Vladislav Nikolayevich Bushaev, Deputy Commander, 43<sup>rd</sup> Rocket Army, SRF, Republic of Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 25, 2002.

<sup>45</sup> Ashton B. Carter and William J. Perry, *Preventive Defense*, pp. 6-7.

<sup>46</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19

missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998," p16.-16

<sup>47</sup> Carter and Perry, *Preventive Defense*, pp. 6-7.

<sup>48</sup> Interview with Mark Beha, CTR Country Manager for Raytheon Corporation, Kiev, Ukraine, November 8, 2002.

<sup>49</sup> Reuters, "Perry Watches Ukraine Destroy Silo," January 5, 1996; Boys Klimenko, "Defense Ministers Witness Demolition of Missile Silo in Ukraine," *The Ukrainian Weekly*, January 14, 1996 cited in Nuclear Threat Initiative, Ukraine Profile, Missile Chronology, [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles)

<sup>50</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998," p16.

<sup>51</sup> Carter and Perry, *Preventive Defense*, p 7.

<sup>52</sup> Interview with J. Randall Regan, CTR Country Manager, Bechtel Corporation, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, January 31, 2000.

<sup>53</sup> Ibid.; Interview with Don Milicevic, SS-19 Silo Elimination Project Manager, Bechtel Corporation, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, 22 February 2002.

<sup>54</sup> Interview with Barrett Haver, CTR Program Manager, Raytheon Technical Services Company, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 1, 2000.

<sup>55</sup> Interview with Nikolai Denysyuk, Operations manager, Heavy Bomber Elimination Program, Raytheon Technical Services Company, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Kiev, Ukraine, February 7, 2003. Colonel Denysyuk retired in 1997 as the director of the Uman Military Repair Depot and subsequently went to work for Raytheon in Kiev.

<sup>56</sup> Ibid.

<sup>57</sup> Interview with Don Milicevic, SS-19 Silo Elimination Project Manager, Bechtel Corporation, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, 22 February 2002.

<sup>58</sup> Interview with Major General Vladislav Nikolayevich Bushaev, Deputy Commander, 43<sup>rd</sup> Rocket Army, SRF, Republic of Ukraine, with Joseph P. Harahan, Historian, DTRA, February 25, 2002.

<sup>59</sup> Interview, Miscevic, SS-19 Silo Elimination Project Manager, Bechtel, Kiev, Ukraine, 22 February 2002.

<sup>60</sup> Interview, Dr. Oleg Blonar, Director General, Stroom, RITIE, Inc, Vinnitsa, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 26, 2002.

<sup>61</sup> Ibid.

<sup>62</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998." pp. 15-20.

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<sup>63</sup> Interview with General-Colonel O. Kuzmuk, Minister of Defense, 1996-2001, Republic of Ukraine, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 5, 2003.

<sup>64</sup> For the Ukrainian government's rationale for the reorganization, see, Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998." During the interview, Regan observed that the U.S. government had no advanced knowledge of these changes in the defense ministry. See Interview with J. Randal Regan, CTR Country Manager, Bechtel Corporation, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, January 31, 2000.

<sup>65</sup> Interview, Miscevic, SS-19 Silo Elimination Project Manager, Bechtel Corporation, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, 22 February 2002.

<sup>66</sup> Ibid.

<sup>67</sup> Interview, Beha, CTR Country Manager, Raytheon Corporation, Kiev, Ukraine, November 8, 2002.

<sup>68</sup> Interview, Miscevic, SS-19 Silo Elimination Project Manager, Bechtel Corporation, Kiev, Ukraine, 22 February 2002.

<sup>69</sup> Interview, Regan, CTR Country Manager, Bechtel Corporation, Kiev, Ukraine, January 31, 2000.

<sup>70</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998." pp. 17-18.

<sup>71</sup> Ibid., Chapter 3, 17-18; See Interview with General Kuzmuk, Minister of Defense, 1996-2001, Ukraine with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 5, 2003.

<sup>72</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998," Chapter 3, p.19.

<sup>73</sup> Interview General Kuzmuk, Minister of Defense, 1996-2001, Ukraine, February 5, 2003.

<sup>74</sup> Ibid.

<sup>75</sup> Interview, J. Randal Regan, CTR Country Manager, Bechtel Corporation, Kiev, Ukraine, January 31, 2000.

<sup>76</sup> Interviews with Yulia Company Managers, Igor Yefimovich Kravets, Business Manager Mikhail Ivanovich Brovochenko, Chief Engineer, Yevgeny Grigorievich Korolchuk, Project Manager, Strategic Nuclear Arms Elimination Project, in Vinnitsa, Ukraine, February 25, 2002. All interviews by author.

<sup>77</sup> Interviews with Yulia Company managers, I.Y. Kravets, Business Manager M.I. Brovochenko, Chief Engineer, and Y.G. Korolchuk, Project Manager, Strategic Nuclear Arms Elimination Project, in Vinnitsa, Ukraine, February 25, 2002. All interviews by author.

<sup>78</sup> Ibid.

<sup>79</sup> Ibid.

<sup>80</sup> Ibid.

<sup>81</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998," Chapter 3. See Report, CTR Directorate, DTRA, "Cooperative Threat Reduction Program, Ukraine, 20 July 1999.

<sup>82</sup> Report, CTR Directorate, DTRA, "Cooperative Threat Reduction Program, Ukraine, 20 July 1999.

<sup>83</sup> Ibid.

<sup>84</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998." pp. 27-28.

<sup>85</sup> President Putin announced that Russia had received the SS-19 missiles from Ukraine. The missiles were empty, without fuel. The price was uncertain, either \$50 million or that amount in the cancellation of oil and gas debts. See *Izvestiya*, 21 October, 2003.

<sup>86</sup> Briefings, CTR Program Review, CTR Directorate, Defense Threat Reduction Agency, July 7, 1999.

<sup>87</sup> See Report, CTR Directorate, DTRA, "Cooperative Threat Reduction Program, Ukraine, 20 July 1999.

<sup>88</sup> Ibid.

<sup>89</sup> Interview with Wayne H. Holcombe, CTR Program Manager, Washington Group International, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 22, 2002.

<sup>90</sup> Report, S.A. Zimin, Group Manager, Washington Group International, "Neutralization Facility", no date.

<sup>91</sup> Interview with Gene Hicks, Bechtel SS-24 Silo Dismantlement Project Manager, Pervomaysk, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 26, 2002. Hicks joined Bechtel in 1997, after working for Morrison-Knudsen on the SS-19 project.

<sup>92</sup> Interview, Hicks, Bechtel SS-24 Project Manager, Pervomaysk, Ukraine, February 26, 2002

<sup>93</sup> Ibid. All quotes taken from Hicks' interview.

<sup>94</sup> Interview, Hicks, Bechtel SS-24 Project Manager, Pervomaysk, Ukraine February 26, 2002.

<sup>95</sup> Interview with Mary Ann Miles, CTR International Project Manager, DTRA, Ft. Belvoir, Virginia, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, March 2, 2003.

<sup>96</sup> CTR Program Review, DTRA, July 7, 1999. See also Interview with Wayne Holcombe, CTR Program Manager, Washington Group International, Kiev, Ukraine, February 22, 2002.

<sup>97</sup> Interview with Mary Ann Miles, CTR International Project Manager, CTR Directorate, DTRA, Ft. Belvoir, Virginia, March 2, 2003.

<sup>98</sup> Briefings, CTR Program Review, CTR Directorate, Defense Threat Reduction Agency, July 7, 1999.

<sup>99</sup> Ibid.

<sup>100</sup> Interview, Regan, CTR Country Manager, Bechtel Corporation, Kiev, Ukraine, January 31, 2000.

<sup>101</sup> For the difficulty in the ministries reaching agreement see, Interview with Professor Eduard Prokhach, Director, Kharkiv Scientific Research Center of Military Ecology, Kiev, Ukraine, June 6, 2002, and Interview, Regan, CTR Country Manager, Bechtel Corporation, Kiev, Ukraine, January 31, 2000. For the statistics on the work completed annually see, Ministry of Defense, Ukraine, Report, 43<sup>rd</sup> Rocket Army, "Elimination of Strategic Offensive Weapons in Ukraine in the Name of World Peace," 2002, Vinnitsa, Ukraine.

<sup>102</sup> Reference Data, "SS-24 ICBM Scalpel", [www.fas.org/nuk/guide/russia/icbm/r-36m.htm](http://www.fas.org/nuk/guide/russia/icbm/r-36m.htm).

<sup>103</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998." pp. 20-21.

<sup>104</sup> *Ibid.*, p. 21.

<sup>105</sup> U.S.-Ukraine Binational Commission, Joint Statement: Inaugural Plenary Session, May 16, 1997, Washington, D.C., in *Nuclear Threat Initiative Country Overview: Ukraine*, [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles).

<sup>106</sup> See *Nuclear Threat Initiative, Ukraine Profile, Missile Chronology*, May 5, 1997 "U.S. Grants Ukraine \$47 Million to Dismantle SS-19 Silos", [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles).

<sup>107</sup> U.S.-Ukraine Binational Commission, Joint Statement: Inaugural Plenary Session, May 16, 1997, Washington, D.C., in *Nuclear Threat Initiative Country Overview: Ukraine*, [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles).

<sup>108</sup> For quote, see article cited in *Nuclear Threat Initiative, Ukraine Profile, Missile Chronology*, May 16, 1997 "Ukraine to destroy SS-24 ICBMs with CTR Funding", [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles). For detail of Clinton-Kuchma discussions, see Ashton B. Carter and William J. Perry, *Preventive Defense*, p.76.

<sup>109</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998." p 21.

<sup>110</sup> *Ibid.*, pp 21-24.

<sup>111</sup> Briefings, CTR Program Review, CTR Directorate, Defense Threat Reduction Agency, July 7, 1999.

<sup>112</sup> Briefing, Bechtel Country Manager, "SS-24 ICBM Silo Dismantlement", U.S.-Ukraine CTR Program Management Review, May 14-18, 2001, Kiev, Ukraine.

<sup>113</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998.", 22-24; Briefing, Bechtel Country Manager, "SS-24 ICBM Silo Dismantlement," CTR Program Management Review, May 14-18, 2001, Kiev, Ukraine.

<sup>114</sup> Commander Mike Johnson, USN, CTR Program Manager for Ukraine, "Ukraine, Program Management Review: Strategic Nuclear Arms Elimination, and Weapons of Mass Destruction Infrastructure Elimination," Kiev, Ukraine, June 4, 2002.

<sup>115</sup> Briefings, CTR Program Review, CTR Directorate, Defense Threat Reduction Agency, July 7, 1999.

<sup>116</sup> Commander Mike Johnson, USN, CTR Program Manager for Ukraine, "Ukraine, Program Management Review: Strategic Nuclear Arms Elimination, and Weapons of Mass Destruction Infrastructure Elimination," Kiev, Ukraine, June 4, 2002.

<sup>117</sup> *Ibid.*

<sup>118</sup> Interview with Gene Hicks, Bechtel SS-24 Silo Dismantlement Project Manager, Pervomaysk, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 26, 2002.

<sup>119</sup> Interview with Major-General Oleksander Iliashov, Commanding General, 46<sup>th</sup> Rocket Division, 43<sup>rd</sup> Rocket Army, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, June 3, 2003; Briefings, CTR Program Review, CTR Directorate, Defense Threat Reduction Agency, July 7, 1999.

<sup>120</sup> Interview, Regan, CTR Country Manager, Bechtel Corporation, Kiev, Ukraine, January 31, 2000; and Interview, Hicks, Bechtel SS-24 Silo Dismantlement Project Manager, Pervomaysk, Ukraine, February 26, 2002.

<sup>121</sup> Interview, Dr. Oleg Blanar, Director General, Stroom, RITIE, Inc, Vinnitsa, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, February 26, 2002.

<sup>122</sup> Interview, Hicks, Bechtel SS-24 Silo Dismantlement Project Manager, Pervomaysk, Ukraine, February 26, 2002.

<sup>123</sup> For the statistics on the work completed see, Minister of Defense, Ukraine, Report, by 43<sup>rd</sup> Rocket Army, "Elimination of Strategic Offensive Weapons in Ukraine in the Name of World Peace," 2002, Vinnitsa, Ukraine.

<sup>124</sup> Interview, Hicks, Bechtel SS-24 Silo Dismantlement Project Manager, Pervomaysk, Ukraine, February 26, 2002.

<sup>125</sup> Interview, Blanar, Director General, Stroom, RITIE, Inc, Vinnitsa, Ukraine, February 26, 2002.

<sup>126</sup> Interview with Wayne H. Holcombe, CTR Program Manager, Washington Group International, Kiev, Ukraine, February 22, 2002.

<sup>127</sup> I am grateful to many of the project managers for sharing their experiences. For a routine schedule by a CTR project manager, see Interview, Mary Ann Miles, CTR International Project Manager, CTR Directorate, DTRA, Ft. Belvoir, Virginia, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency March 2, 2003.

<sup>128</sup> Interview, Holcombe, CTR Program Manager, Washington Group International, Kiev, Ukraine, February 22, 2002.

<sup>129</sup> Interview, Hicks, Bechtel SS-24 Silo Dismantlement Project Manager, Pervomaysk, Ukraine, February 26, 2002.

<sup>130</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998.", p.21.

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<sup>131</sup> Briefing, Wayne Holcombe, CTR Program Manager, Washington Group International, "SS-24 Missile Disassembly, Storage Facilities, and Elimination," PMR Conference, Kiev, Ukraine, June 4, 2002.

<sup>132</sup> Interview, Holcombe, CTR Program Manager, Washington Group International, Kiev, Ukraine, February 22, 2002.

<sup>133</sup> Report, CTR Directorate, Defense Threat Reduction Agency, "U.S. –Ukraine Overview of Implementation," August 2001.

<sup>134</sup> Ibid.

<sup>135</sup> Interview, Holcombe, CTR Program Manager, Washington Group International, Kiev, Ukraine, February 22, 2002; Report, "U.S. –Ukraine Overview of Implementation," CTR Directorate, Defense Threat Reduction Agency, August 2001; Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 4, "Continuing Work by the 43<sup>rd</sup> RA on the missile removal, transport, environmental surveys, and silo destruction in the SS-24 Regiments during 199-2001," pp6-7.

<sup>136</sup> Report, CTR Program Office, DOD, *CTR Annual Report to Congress, Fiscal Year 2002*, p. III-29.

<sup>137</sup> Report, CTR Program Office, DOD, to Congress, "Cooperative Threat Reduction Annual Report to Congress, Fiscal Year 2003, p.p. III 10-11. See also, Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 4, "Continuing Work by the 43<sup>rd</sup> RA on the missile removal, transport, environmental surveys, and silo destruction in the SS-24 Regiments during 199-2001," pp 15-17.

<sup>138</sup> "Explosion at Pavlograd Mechanical Plant," June 8, 2002, cited in *Nuclear Threat Initiative, Country Overviews: Ukraine*, [www.nti.org/e\\_research/profiles/Ukraine](http://www.nti.org/e_research/profiles/Ukraine).

<sup>139</sup> Testimony, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, U.S. Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, March 10, 2004.

<sup>140</sup> James H. Reid, Director, CTR Policy Office, Office of the Secretary of Defense, "Memorandum for Director, Treaties and Threat Reduction, OSD/Acquisition, Technology and Logistics," March 22, 2007; Interview, Ambassador Carlos Pascual, U.S. Ambassador to Ukraine, 2002-2003, Kiev, Ukraine, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, June 5, 2003.

<sup>141</sup> Report, "U.S. –Ukraine Overview of Implementation," CTR Directorate, Defense Threat Reduction Agency, October 2002.

<sup>142</sup> Briefing, Wayne Holcombe, CTR Program Manager, Washington Group International, "SS-19 Non-Deployed Missile Elimination," PMR Conference, Kiev, Ukraine, June 4, 2002.

<sup>143</sup> "SS-19 Missile from Ukraine to Russia," *Izvestia*, Moscow, Russia, October 21, 2003.

<sup>144</sup> Ibid.

<sup>145</sup> Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of Ukraine Concerning Cooperation in the Elimination of Infrastructure for Weapons of Mass Destruction Through Provision to Ukraine of Material, Services, and Related Training. Kiev Ukraine, June 27, 1995.

<sup>146</sup> Amendment to the Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of Ukraine Concerning Cooperation in the Elimination of Infrastructure for Weapons of Mass Destruction Through Provision to Ukraine of Material, Services, and Related Training. Pervomaysk, Ukraine, June 4, 1996.

<sup>147</sup> CTR Program Office, DOD, *CTR Annual Report to Congress, Fiscal Year 2002*, pp III-31. See also, News Release, Defense Threat Reduction Agency, "Unified Fill Facility/Nuclear Weapons Storage Area Projects Completed," June 2002; and Report, CTR Directorate, Defense Threat Reduction Agency, "U.S. –Ukraine Overview of Implementation," October 2002.

<sup>148</sup> For the linkage of these two men, I am indebted to General Bushaev. Interview with Major General V.N. Bushaev, Deputy Commander, 43<sup>rd</sup> Rocket Army, SRF, Republic of Ukraine, February 25, 2002.

<sup>149</sup> CTR Program Office, DOD, *CTR Annual Report to Congress, Fiscal Year 2002*, pp III-31; Report, "U.S. –Ukraine Overview of Implementation," CTR Directorate, Defense Threat Reduction Agency, October 2002.

<sup>150</sup> Report, "U.S. –Ukraine Overview of Implementation," CTR Directorate, Defense Threat Reduction Agency, October 2002; see also CTR Program Office, DOD *CTR Annual Report to Congress, Fiscal Year 2006*, p 32.

<sup>151</sup> Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," see Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998," pp.21-24.

<sup>152</sup> Report, "U.S. –Ukraine Overview of Implementation," CTR Directorate, Defense Threat Reduction Agency, October 2002.

<sup>153</sup> CTR Program Office, DOD, *CTR Annual Report to Congress, Fiscal Year 2006*, p 32.

<sup>154</sup> Interview with Volodymyr P. Horbulin, Assistant to the President of Ukraine on National Security, 15 March 2003.

<sup>155</sup> FAS WMD Data Base, "Tu-160 BLACKJACK (TUPOLEV)" [www.fas.org/nuke/guide/russia/bombers](http://www.fas.org/nuke/guide/russia/bombers). See also, "Tu-160 Blackjack Strategic Bomber, Russia," [www.airforce-technology.com/planes](http://www.airforce-technology.com/planes).

<sup>156</sup> See news articles cited in *Nuclear Threat Initiative, Ukraine Profile, Bomber Decommissioning and Transfer Developments, "Overview: Ukraine's Heavy Bombers,"* May 1998, [www.nti.org/db/nisprofs/ukraine](http://www.nti.org/db/nisprofs/ukraine).

<sup>157</sup> For analysis of these negotiations and meetings see Sasha Pursley, "Overview: Ukraine's Heavy Bombers," *Nuclear Threat Initiative, Ukraine Profile* May 1998, in [www.nti.org/db/nisprofs/ukraine](http://www.nti.org/db/nisprofs/ukraine).

<sup>158</sup> Ibid.

<sup>159</sup> Interview with General-Colonel O. Kuzmuk, Minister of Defense, 1996-2001, Republic of Ukraine, Kiev, Ukraine, February 5, 2003.

<sup>160</sup> Interview with Lt. Colonel Victor F. Kuzminskiy, SOATIC Representative, Ukrainian Air Force, Kiev, Ukraine, November 7, 2002.

<sup>161</sup> For the participants and purpose of the meeting see, Report, Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, "Decommissioning ...", p.28. For General Kuening's biography see, Biography, United States Air Force, "Brigadier General Thomas E. Kuening, Jr," [www.af.mil/bios](http://www.af.mil/bios).

<sup>162</sup> See, Report, Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998.", pp.28-30.

<sup>163</sup> Interview, Barrett Haver, CTR Program Manager for Heavy Bomber Elimination, Raytheon technical Services Company, Kiev, Ukraine, February 1, 2000.

<sup>164</sup> Report, Professor Director Eduard Prokhach, Director, Kharkiv Scientific Research Center of Military Ecology, Kiev, Ukraine, June 6, 2000.

<sup>165</sup> Ibid.; Report, Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998.", pp.28-30; Briefing, SNAE Program Management Review, "Elimination of Tu-160, Tu-95MS Heavy Bombers and Kh-55 ALCMS in Ukraine", U.S.-Ukraine Program Management Review, Kiev, Ukraine May 14-18 2001.

<sup>166</sup> Interview with LTC Jack Sajevic, U.S. Army, Start Treaty Nuclear Division, Defense Threat Reduction Agency, February 24, 2000., and Interview with Lt. Colonel Victor F. Kuzminskiy, SOATIC Representative, Ukrainian Air Force, Kiev, Ukraine, November 7, 2002.

<sup>167</sup> Interview, Barrett Haver, CTR Program Manager for Heavy Bomber Elimination, Raytheon Technical Services Company, Kiev, Ukraine, February 1, 2000.

<sup>168</sup> See news articles cited in Nuclear Threat Initiative, Ukraine Profile, Bomber Decommissioning and Transfer Developments, "Ukraine Offers Russia 10 Strategic Bombers to Cancel Gas Debt," and "Ukraine sends Russia first two Strategic Bombers," pp4-5, [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles).

<sup>169</sup> Interview with Major Donald Parman, CTR Project Officer, CT Directorate, Defense Threat Reduction Agency, September 2, 2002.

<sup>170</sup> Ibid. What it took to break these logjams is never completely clear. Certainly these cooperative assistance projects suffered numerous delays over the years.

<sup>171</sup> Interview with Jack Sajevic, Program Manager for Heavy Bomber Elimination, Raytheon Technical services Company, Kiev, Ukraine, February 22, 2002.

<sup>172</sup> Interview with Andre Kukin, President, Ukrainian Cargo Airways, Kiev, Ukraine, November 13, 2002.

<sup>173</sup> Ibid.

<sup>174</sup> Interview with Lt. Colonel Victor F. Kuzminskiy, SOATIC Representative, Ukrainian Air Force, Kiev, Ukraine, November 7, 2002.

<sup>175</sup> Report, Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 4, "Continuing work by the 43<sup>rd</sup> Rocket Army

on the missile removal, transport, environment surveys, and silo destruction in the SS-24 regiments during 1999-2001," p 13-14.

<sup>176</sup> Interview with Major Donald Parman, CTR Project Officer, CTR Directorate, Defense Threat Reduction Agency, September 2, 2002; Interview John Connell, Program Manager, CTR Directorate, Defense Threat Reduction Agency, Ft. Belvoir, Virginia, February 16, 2001. For program tracking see, CTR Program Office, DOD, *CTR Annual Report to Congress, Fiscal Year 2002*, pp III-30; Report, CTR Directorate, Defense Threat Reduction Agency "U.S.-Ukraine Overview of Implementation", October 2002.

<sup>177</sup> For program tracking see, CTR Program Office, DOD, *CTR Annual Report to Congress, Fiscal Year 2006*, pp. 28-32.

<sup>178</sup> Briefing, Commander Mike Johnson, USN, CTR Program Manager for Ukraine, "Ukraine, Program Management Review: Strategic Nuclear Arms Elimination, and Weapons of Mass Destruction Infrastructure Elimination," to U.S.-Ukraine Program Management Review, Kiev, Ukraine, June 4, 2002.

<sup>179</sup> For program description see, CTR Program Office, DOD, *CTR Annual Report to Congress, Fiscal Year 2006*, pp 28-29.

<sup>180</sup> U.S. Department of State, "Proliferation Security Initiative," September 15, 2003, [www.state.gov/pa/ei/rls](http://www.state.gov/pa/ei/rls); Stephen G. Rademaker, Assistant Secretary of State for Arms Control, "The Proliferation Security Initiative (PSI): A record of Success," Testimony before the House International Relations Committee, June 9, 2005, in U.S. State Department, [www.state.gov/t/ac/rls/rm](http://www.state.gov/t/ac/rls/rm) Robert G. Joseph, Under Secretary for Arms Control and International Security, "The Bush administration Approach to Combating the Proliferation of Weapons of Mass Destruction," Remarks to Carnegie International proliferation Conference, Washington, D.C., November 7, 2005, in U.S. State Department, [www.state.gov/t/us/rm](http://www.state.gov/t/us/rm)

<sup>181</sup> For a summary of these programs see the Statement, Robert G. Joseph, Under Secretary for Arms Control and International Security, Senate Foreign Relations Committee, Washington, D.C., February 9, 2006, in U.S. State Department, [www.state.gov/t/us/rm60894.htm](http://www.state.gov/t/us/rm60894.htm).

<sup>182</sup> For a description of the program see, CTR Program Office, DOD, *CTR Annual Report to Congress, Fiscal Year 2006*, pp 58-60.

<sup>183</sup> The basic Implementing Agreement is: "Agreement between the United States of America and the Ministry of Health of Ukraine Concerning Cooperation in the area of Prevention of Proliferation of Technology, Pathogens, and Expertise that could be used in the development of Biological Weapons, August 29, 2005, Kiev, Ukraine.

<sup>184</sup> See *Nuclear Threat Initiative, Ukraine Profile, Missile Chronology*, "43<sup>rd</sup> Rocket Army Disbands," August 20, 2002, [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles). For quote, see, Report, General Mikhtyuk, "Status of the 43<sup>rd</sup> Rocket Army, 1991-2002," Chapter 3, "Decommissioning, missile removal, transport, environmental survey, and silo destruction of the SS-19 missiles in the 43<sup>rd</sup> Rocket Army during 1995, 1996, 1997, and 1998.", p.35.



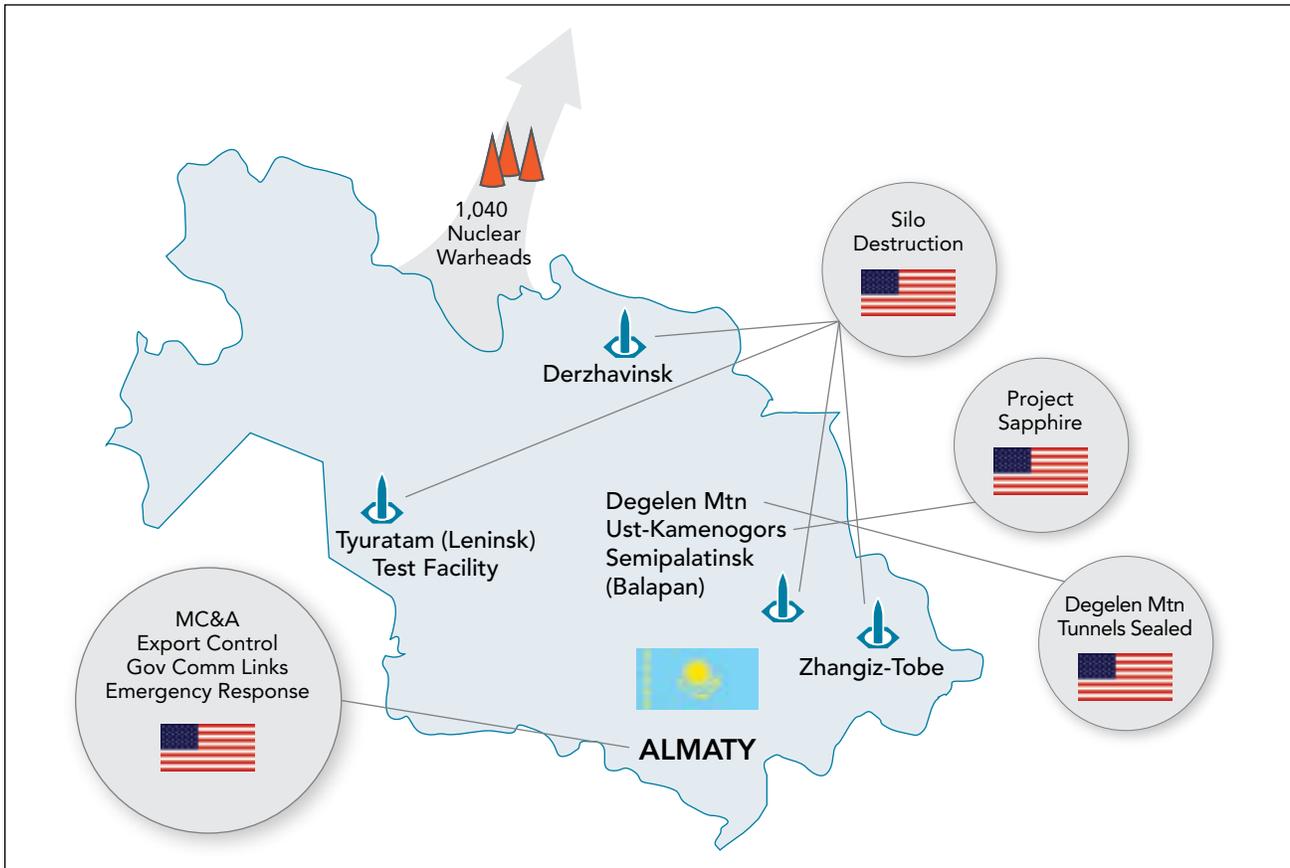
## **Kazakhstan Translates Inherited Weakness into Regional Strength**

When Kazakhstan became a nation in 1991 it was a weak state. Its national borders were unknown and unsecured. It had no army, navy or air force. In the past, the Soviet Union had stationed strategic nuclear and conventional military forces on its territory. Soviet Strategic Rocket Forces equipped with SS-18 ICBMs (104 missiles, 1,040 nuclear warheads) were based at Zhangiz-Tobe, Derzhavinsk, Leninsk and Semipalatinsk. Soviet Air Forces equipped with 47 Tu-92M bombers and 320 nuclear cruise missiles operated from the air base at Chagan. During the Cold War, successive Soviet governments had constructed and operated large, modern missile, aeronautical and nuclear weapons test ranges in the Kazakhstan republic. After 1991, Russia assumed control of the operational strategic forces and test ranges, most importantly the Semipalatinsk Nuclear Weapons Proving Ground and the Baykonur Space Launch Complex. At the vast 18,000 square-kilometer Semipalatinsk nuclear test site, Soviet nuclear testing engineers and weapon designers had conducted 456 test nuclear explosions: 340 underground and 116 atmospheric. Semipalatinsk's Degelen Mountain range was the largest underground nuclear test site in the world, with 186 separate tunnels cut into the natural mountains. At the large 6,700 square-kilometer cosmodrome at Baykonur, Soviet missile experts launched most of the nation's military and industrial satellites.<sup>1</sup>

In addition, Kazakhstan had within the new nation, nuclear testing and storage facilities at Kokshetay, a nuclear breeder reactor at Aqtan, several missile tracking and monitoring stations, a nuclear manufacturing complex at Ust-Kamenogorsk, a chemical weapons production plant

in Pavlodar, and biological weapons plants and institutes in Stepnogorsk and Almaty. Other enterprises and plants fabricated beryllium and nuclear reactor fuels. In Oral, Soviet-era plants manufactured heavy machine guns for tanks and anti-ship missiles for the navy. In Petropavl, a missile plant produced SS-21 missiles, and other military industrial plants produced naval torpedoes, military communications systems, artillery, armored vehicles and tactical missile launchers. Kazakhstan had more than 50 military-industrial enterprises, employing approximately 75,000 workers. Not included in this number were thousands of skilled technical and scientific people working at the space launch center and underground nuclear test sites.

Within the Kazakh government in 1991, few if any ministers or elected officials knew the full extent of these military-industrial enterprises, military forces, chemical and biological plants, test ranges, and especially the nuclear weapons and uranium storage areas. Everything had been kept secret. However, President Nursultan Nazarbayev did know that Kazakhstan was an unprotected, vast nation (2.7 million square kilometers) with a small population (15 million) whose economy was directly linked with the Soviet Union's planned military-industrial economic system. Among the newly independent Central Asian nations, Kazakhstan had inherited the largest number of Soviet-era military-industrial scientific enterprises. President Nazarbayev and his ministers recognized another important reality: Russia's powerful ministries had assumed that for the foreseeable future they would control most, if not all of these military-industrial enterprises and complexes.<sup>2</sup>



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Consequently, in the initial months of independence Nazarbayev adopted military policies that supported the Commonwealth of Independent States and creation of a CIS Armed Forces. Kazakhstan did not establish a national army, unlike Ukraine, which set up its army, navy, air force, and defense ministry within weeks of national independence. Instead, Nazarbayev supported Yeltsin and Marshal Shaposhnikov as they set about establishing the Russian-dominated CIS Armed Forces. Its multinational forces would incorporate not only the region’s strategic nuclear forces, but also all conventional forces located in the newly independent states. When this effort failed in the spring of 1992, Nazarbayev resisted forming a national army until every other new state, including Russia, had acted.<sup>3</sup> In economic policy, Nazarbayev sought economic integration with Russia. In foreign affairs, Kazakhstan’s president supported Russia’s leadership at CIS summits, regional meetings and in new economic initiatives.<sup>4</sup> Kazakhstan was an exceptionally weak nation, far from the center of power and with few military allies in the region.

Four developments during the formative years, 1992-1994, changed Kazakhstan’s course from a nation with inherited weakness into one with regional leadership and influence.

### Four developments

The first concerned Russia, directly. As a consequence of the collapse of the Soviet Union’s centralized command economy, President Yeltsin and the Russian government inherited an economy in free fall.<sup>5</sup> Russia declared it would assume the USSR’s debts, including its massive balance of payments deficit. Within a few months the new nation’s currency reserves fell drastically. Coincidentally, tax receipts into the government declined sharply. The Russian Duma reacted by slashing budgets of the “power” ministries: defense, atomic energy and industrial enterprises. Across Russia the command economy ground to a halt. Externally in Belarus, Ukraine, Kazakhstan and the new Central Asian nations, the military-industrial sectors declined rapidly. In Ukraine and Belarus, the governments adopted a fiscal policy of promoting full

employment by funding the defense enterprises with inflated currencies. The consequences were disastrous. Kazakhstan was a much smaller and weaker nation. Its economic policy supported integration with Russia, but the government did not move to subsidize the large, failing military-industrial enterprises. As Russian factory orders for military equipment manufactured in Kazakhstan declined, Russian financial support for the Baykonur space cosmodrome fell drastically. In the Russian Duma all new appropriations for the nuclear weapons testing complex at Semipalatinsk collapsed.<sup>6</sup>

Since the Baykonur and Semipalatinsk testing complexes were “virtually Slav enclaves, operated and guarded by highly skilled and highly privileged personnel,” they experienced the most rapid decline in living standards.<sup>7</sup> Between 1992 and 1994 many Russian scientists, technicians and their families packed up and left Kazakhstan. In Baykonur, the complex’s dormitory city, Tyuratam, the population fell by a third with more than 30,000 people emigrating by the winter of 1994. Many of the city’s basic municipal services stopped, school buildings closed, entire blocks of apartment buildings were abandoned, food supplies were uncertain and fuel deliveries were irregular. Kazakh newspapers reported that theft was common, both of personal and state property. One observer found that “buildings were being stripped of everything that can possibly be moved, including cables and strips of sheet metal. Silver-nickel plates from solar batteries were especially prized.”<sup>8</sup>

At the Baykonur cosmodrome, launch sites and facilities deteriorated from lack of funds, harsh winter conditions and the absence of skilled technical personnel. At the Nuclear Weapons Proving Ground at Semipalatinsk, Russian scientists and their families began emigrating in significant numbers. President Nazarbayev declared a moratorium on nuclear testing in 1991. The following year, President Yeltsin issued a moratorium from Russia. Consequently, many Russian nuclear scientists saw little prospect for further testing at Semipalatinsk. Russian funding for the testing complex fell swiftly. All across Kazakhstan, military-industrial scientific enterprises were declining rapidly. Eventually, entire factories were simply abandoned. One unexpected consequence of this economic collapse across Kazakhstan, virtually all caused by the demise of Russia’s command economy, was that President Nazarbayev and the government began seeking foreign investments for developing the nation’s oil and gas fields.

They also sought foreign aid to reorient and stimulate the economy.

The second development was also a direct consequence of the Soviet Union’s economic collapse. Stationed on Kazakhstan’s territory were thousands of former Soviet military forces – strategic rocket forces, long-range air forces, air defense units, conventional armies, artillery units, naval units and even military cosmonaut organizations. Initially President Nazarbayev acquiesced to Yeltsin and Marshal Shaposhnikov’s military solution to place these forces into the CIS Armed Forces. When this policy was rejected in the spring of 1992 by Ukraine, Georgia and other CIS nations, Russia’s General Staff drew up a plan to apportion all former USSR military forces to the new nations based on the principle of *in situ*: where the forces were located is where they would remain. In May 1992, when the CIS nations’ defense ministers met in Tashkent they approved the General Staff’s plan for dividing up the former empire’s enormous military arsenal. At the same time, CIS leaders signed the Collective Security Treaty of Tashkent, in which they agreed that aggression against one nation would be treated as aggression against all. This treaty reduced Kazakhstan’s fears about its unprotected borders. Then in mid-May, Chinese leaders declared in a formal letter to Kazakhstan that its government would relinquish all claims to Kazakh territory.<sup>9</sup> As a result of these military and diplomatic developments, perceptions that Kazakhstan was a weak, vulnerable nation diminished.

The major exceptions to the *in situ* rule were the strategic nuclear forces in Kazakhstan, Ukraine and Belarus, which remained under operational command of the CIS Armed Forces. In May 1992 these three nations agreed, under pressure from the United States, Russia, Europe and Japan, to become non-nuclear states by signing the Lisbon Protocols to the START Treaty and by acceding to the Nuclear Nonproliferation Treaty. When they became signatories to these treaties, the United States recognized Kazakhstan, Ukraine and Belarus as legal successor states to the Soviet Union. In this treaty, these nations were coequal with Russia. It was understood that these three nations would dismantle and destroy the strategic weapons located on their territories, follow the treaty’s elimination schedules and return nuclear warheads to the Russian Federation. At the time and in subsequent years, Ukrainian leaders argued their nation owned, but did not control weapons and nuclear warheads

on its territory. Consequently, Ukraine would retain weapons and warheads until it received security guarantees and adequate compensation. Belarusian leaders never claimed ownership, agreeing to send the weapons to Russia's Strategic Rocket Forces. Kazakhstan's Nazarbayev participated in all regional summit meetings, met frequently with Yeltsin, watched events unfolding in Belarus and Ukraine, but he refrained from signing any bilateral strategic nuclear force agreements with Russia in 1992 or 1993.<sup>10</sup>

The third development was the most dramatic. The Russian General Staff grew increasingly frustrated as they watched diplomatic and military developments. Kazakhstan's president and defense minister met frequently with Russian military and foreign ministry officials. They discussed a series of agreements that would define the legal rights of Russian military forces in Kazakhstan, Russian use of the military and aeronautical test ranges, procedures for officers transferring between national armies, procedures for joint officer training and plans for future use of the Baykonur cosmodrome. Nazarbayev and his ministers were tough negotiators, discussing numerous agreements, but signing very few.<sup>11</sup> As negotiations stalled, the Russian General Staff ordered Russian military commanders in Kazakhstan to prepare their forces, weapons and equipment for relocation to Russian military bases. Despite the "in situ" principle, Russian pilots flew Tu-95M bombers out of Kazakhstan to military bases in Russia.<sup>12</sup> Russia's 12<sup>th</sup> Main Directorate, commanded by Lieutenant General Yevgeny Maslin, sent special teams of nuclear technicians into SS-18 rocket divisions stationed in Kazakhstan. They began packaging and shipping the first of 1,040 nuclear warheads from Kazakhstan to Russia. In late 1992, Russia's Strategic Rocket Forces ordered the 33<sup>rd</sup> Guards' Rocket Army and its 38<sup>th</sup> Missile Division at Derzhavinsk and the 57<sup>th</sup> Missile Division at Zhangiz-Tobe to initiate operations to remove SS-18 missiles from silos, defuel and load them into special military transport containers for shipment to Russia. By the end of 1993, the 33<sup>rd</sup> Guards' Rocket Army had decommissioned and deactivated all of its 104 SS-18 ICBMs and had shipped 120 warheads to Russia.<sup>13</sup>

Kazakhstan's government protested these military movements, but since they controlled none of the forces, their protests were ignored. Eventually the reality of these strategic force relocations as well as the signing of the January 1994 Trilateral Agreement, which resolved Ukraine's nuclear



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Kazakhstan President Nursultan A. Nazarbayev (RIA Novosti)

status, and Yeltsin's desire to settle all existing nuclear force issues, prompted Nazarbayev to sign a series of international treaties and bilateral agreements with Russia in 1994 and 1995.<sup>14</sup> These Russian-Kazakhstan agreements resolved the status of the strategic nuclear forces stationed in Kazakhstan, determined the amount of Russian compensation for the uranium materials in strategic and tactical nuclear weapons, set the level of Russian compensation for the strategic bombers and affirmed explicit security guarantees. When these developments were viewed in the short term, it seemed Nazarbayev had agreed to the demands of Yeltsin and the Russian General Staff. If seen longer term, however, Russia's withdrawal of strategic bombers and rocket forces, its commitments to compensation and its pledge of security guarantees for the territorial integrity of the new nation all strengthened Kazakhstan and allowed it to turn to developing its oil and gas resources and promoting new regional and international alliances with China, Central Asian nations, Europe and the United States.

Kazakhstan's engagement with the United States constituted the fourth development. In mid-December 1991

just as the Soviet Union was collapsing, U.S. Secretary of State James Baker flew into Almaty for meetings with President Nazarbayev. Baker met with Yeltsin and Shaposhnikov in Moscow, and then flew eastward to Kyrgyzstan and Kazakhstan, and back to Ukraine and Belarus. When he arrived in Almaty in mid-December, he met with President Nazarbayev and they discussed the new nation's independence, the new Commonwealth of Independent States, U.S. diplomatic recognition, humanitarian aid, and the advantages and disadvantages of denuclearization. Nazarbayev told Baker he would sign and secure ratification of the Nuclear Non-Proliferation Treaty since he wanted international recognition for Kazakhstan and assurances of its territorial integrity.<sup>15</sup> Since nuclear non-proliferation lay at the heart of U.S. foreign policy objectives, Baker assured Nazarbayev the United States would grant diplomatic recognition and move quickly to have an American ambassador and an embassy staff in place and working in Kazakhstan.<sup>16</sup>

### Nazarbayev's critical decision

During the late winter and spring months of 1992 Nazarbayev wavered in his commitment to denuclearize the nation. Secretary Baker called and wrote him repeatedly, emphasizing that Kazakhstan would receive economic aid, military assistance, and international political recognition, if he followed through on his previous public announcements to sign and ratify the NPT treaty. Then in late May, following confluence of the new regional CIS collective security treaties, the Russian General Staff's decision to partition the former USSR's conventional forces and the Chinese letter of non-interference, Baker persuaded Nazarbayev to travel to Washington and meet with President Bush. There for the first time publicly, Nazarbayev pledged to sign and ratify START I, its new protocols and to join the NPT Treaty as a non-nuclear state. From Washington he traveled to Lisbon, Portugal where he signed the treaties. He then declared in a side letter to Bush and Yeltsin that all SS-18 missiles located on Kazakhstan's territory would be removed within the treaty's seven-year requirement. Six weeks later, the Kazakh parliament ratified the START Treaty on July 2, 1992. Kazakhstan was the first nation to ratify the treaty, acting ahead of the other signatories: United States, Russia, Belarus, and Ukraine.<sup>17</sup>

The next step, Kazakhstan's ratification of the NPT Treaty took nearly 18 months. In those months Russia's economy weakened further, Yeltsin's political status fell dramatically, even being challenged by a coup in the Russian parliament, and Ukraine's government and parliament seemed incapable of resolving its economic, military and foreign relations. The United States changed its national political administration, replacing its senior leaders with new people and emphasizing new policies. In late summer 1993, Ambassador James Goodby and Gloria Duffy from DOD, visited Kazakhstan and negotiated provisions for the initial CTR agreement. Then in October 1993, Secretary of State Warren Christopher visited several nations in the region, including Kazakhstan where he met with President Nazarbayev. Christopher wanted Nazarbayev to sign the CTR umbrella agreement that would set the terms for American financial and technical assistance for eliminating the START Treaty weapons and systems. Nazarbayev refused, insisting he travel to Washington, meet with President Clinton and sign the agreement there.<sup>18</sup>

Interestingly, Clinton's National Security Council staff recommended the president agree to Nazarbayev's demand, but use it to extract a promise that he would act to sign the bilateral CTR umbrella agreement and persuade the national



Vice President Albert Gore and President Nursultan Nazarbayev, December 1993

parliament to ratify the NPT Treaty. Following several weeks of diplomatic negotiations, Vice President Al Gore flew into Almaty in mid-December for a series of meetings with Kazakhstan's president. Gore formally invited Nazarbayev to the White House. Then, the two men signed the first U.S.-Kazakhstan CTR umbrella agreement. In that document, the United States pledged up to \$84 million in missile and bomber dismantlement and other nuclear weapons-related assistance. Gore announced the United States would invest almost \$200 million in economic assistance in Kazakhstan and the other Central Asian nations over the next three years. When Gore inquired about the status of NPT Treaty ratification, Nazarbayev telephoned the parliament's leader, ordered a vote, and within hours they had approved the treaty's ratification by 238-1.<sup>19</sup>

For Nazarbayev and Kazakhstan the two declarations, one endorsing the international nonproliferation treaty, the other securing U.S. assistance for dismantling the nations' nuclear inheritance had significant consequences. Later Nazarbayev published a book on Kazakhstan's nuclear inheritance, and recalled the days when the "historic decision" was made to become a non-nuclear state.<sup>20</sup> He explained that he and his advisors had analyzed the factors in remaining a nuclear state. In rejecting that status, they decided that if Kazakhstan possessed nuclear weapons, "we automatically would represent a potential military threat for practically every country in the world, at least to those in range of our delivery systems – the missile and aviation complexes. We cannot allow others to regard our country as a conditional enemy, just as we cannot allow other countries to be seen as possible strategic targets." Nazarbayev emphasized that Kazakhstan's non-nuclear status coincided with its strategy of constructing new foreign relations with states in the region and the world. "It is impossible," he wrote, "to live normally in the community of states, especially while conducting an active policy of external integration, and continually threaten with or be threatened by a nuclear attack."<sup>21</sup> President Nazarbayev not only signed and secured ratification of the Non-Proliferation Treaty; he became a leader in the region advocating arms control treaties, weapons agreements, diplomatic alliances and cooperative programs. Under Nazarbayev, Kazakhstan in the 1990s followed a consistent nonproliferation policy, ridding the nation of the residue of its inherited weapons of mass destruction.

## First U.S.-Kazakhstan CTR agreement

When William H. Courtney, the first U.S. Ambassador to Kazakhstan, arrived in Almaty in early February 1992, it was just in time to meet the initial American Provide Hope flight delivering medical supplies and food.<sup>22</sup> During the next three months, Ambassador Courtney had numerous meetings with President Nazarbayev and his senior advisors, and in May the two men traveled to Washington to meet with President Bush. Courtney had extensive experience negotiating arms control treaties and agreements, and had worked closely with the Kazakh president and his advisors on the START Treaty's Lisbon Protocols and accompanying side letters to the Russian and American presidents. A keen observer of the region's shifting relationships, especially with the new states and the larger, dominant Russian Federation, Courtney watched how Nazarbayev and his senior ministers used the U.S.-Kazakhstan relationship to develop a foreign policy of international engagement with the United Nations, the International Atomic Energy Agency, Organization for Security and Cooperation in Europe, and new regional multilateral organizations.

In the realm of international economics, Kazakhstan pursued foreign investment and modern technologies to develop oil fields in the Tengiz region of the Caspian Sea basin. The United States government facilitated American oil and gas corporations interested in investing in the new nation, and the ambassador and small embassy staff assisted these firms in establishing government contacts, meetings and contracts. Yet perhaps the American ambassador's most important work in the initial years was implementing cooperative policies and programs with Kazakhstan in the area of non-proliferation of nuclear, chemical and biological weapons. Courtney was present in Almaty on December 13, 1993 when Vice President Gore and President Nazarbayev signed the first U.S.-Kazakhstan CTR Umbrella Agreement.

The first CTR agreement, entitled "Destruction of Silo Launchers of Intercontinental Ballistic Missiles, Emergency Response, and the Prevention of Proliferation of Nuclear Weapons" had been negotiated by Ambassador James E. Goodby and Foreign Minister Bolat Nourgaliev in the fall of 1993.<sup>23</sup> It stipulated that the United States government would assist the Republic of Kazakhstan in destruction of the SS-18 silo launchers and establishment of verifiable measures against proliferation of nuclear weapons. In

addition, the agreement outlined U.S. assistance for expansion of an emergency response system to be used by Kazakhstan as the Russian Strategic Rocket Forces removed and transported nuclear weapons systems out of the nation. The U.S. pledged other assistance related to destruction of strategic offensive arms located in Kazakhstan. This vague wording was simply a diplomatic device to indicate that the U.S. would provide assistance if any strategic bombers remained on its territory. The parties then identified the framework agreement's executive agents, the Department of Defense for the United States and the Ministry of Defense for Kazakhstan. To accomplish the umbrella agreement's terms and objectives, these ministries were empowered to enter into other implementing agreements.

Susan Koch from the Department of Defense, and General Alibek Kasymov, Chief of Kazakhstan's Armed Forces, signed five implementing agreements that same day.<sup>24</sup> In the first, DOD committed to provide up to \$70 million for the "provision of material, services and related training to



Susan Koch (c.) and DTRA Director Dr. Jay Davis

Kazakhstan in connection with destruction of silo launchers and associated equipment and components." The figure of \$70 million was based on estimates developed by U.S. CTR officials in Washington. However, the implementing agreement set up a process for the Kazakhstan Ministry of Defense to further refine and describe their requirements for materials and services within 60 days and for the U.S. Defense Department to respond to these new requirements within another 60 days. The second implementing agreement committed up to \$5 million for emergency response

equipment and training. The third provided assistance for establishing a government-to-government communications link that would facilitate official notification of START Treaty data and receipt of messages concerning inspection teams arriving and departing Kazakhstan. Essentially, this agreement called for the purchase and delivery of computers, printers and training. The U.S.-Kazakhstan CTR umbrella agreement and bilateral implementing agreements were quite similar to ones signed in Ukraine two weeks earlier. Containing the same legal clauses, they protected the United States from customs duties, internal taxes and legal suits against its officials or agents. They included the same provisions for logistics, training and maintenance of the U.S.-provided equipment. And just like in CTR agreements that U.S. officials signed with Ukraine, Belarus and Russia, the ones initialed in Almaty, Kazakhstan that December, focused American assistance on eliminating those strategic offensive weapons systems included in the START Treaty.<sup>25</sup>

### An unexpected project: Project Sapphire

Despite this considerable diplomatic and legal foundation, the first urgent nonproliferation project with Kazakhstan had nothing to do the START Treaty. Known as Project Sapphire, this effort was one of the most spectacular projects of the entire post-Cold War years. It began quietly in Kazakhstan's first year of independence. In the fall of 1992 Professor Vladimir Sergeev Shkolnik, the newly appointed director of the Kazakhstan Atomic Energy Agency visited the Ulbinsky (Ulba) Metallurgy Plant. There Vitalii Mette, the plant director, explained that one building in the industrial complex warehoused more than 1,000 containers of highly-enriched uranium (HEU).<sup>26</sup> This information was closely guarded; few government officials knew of its existence. Apparently, these weapons-grade materials, approximately several hundred kilograms of HEU, enough to make 20-25 nuclear weapons, had been produced at the complex in the previous decade as fuel for nuclear propulsion reactors designed to power the Soviet Navy's Alfa model submarines. When that program ceased, the HEU containers at the Ulba Metallurgy Plant remained in storage, becoming part of Kazakhstan's nuclear inheritance in the 1990s.

In May 1992, President Nazarbayev signed the United Nation's NPT Treaty, committing Kazakhstan to open all of its nuclear facilities and nuclear materials to periodic inspections



U.S. Embassy, Astana, Kazakhstan

U.S. Ambassador William H. Courtney

and monitoring by the UN's International Atomic Energy Agency (IAEA). Then in February 1993, Director Shkolnik accompanied a small IAEA team to the Ulba plant complex as part of a pre-safeguards inspection visit in preparation for Kazakhstan ratifying and formally joining the NPT Treaty. While there is no indication the UN inspectors saw the stored HEU containers, it is clear that Kazakhstan's Atomic Energy Agency officials would have to eventually inspect the facility and document its materials. As the year progressed President Nazarbayev and his senior advisors decided in July 1993 that they must either secure and guard the Ulba plant to international standards required by the IAEA's safeguards program, or remove the HEU materials altogether. At that point they contacted Ambassador Courtney, seeking advice. The quantity of enriched uranium was not conveyed.<sup>27</sup>

According to William C. Potter, a scholar who researched this project carefully, Courtney made an urgent request to the U.S. State Department and the National Security Council. Using diplomatic channels, the State Department contacted senior officials in the Russian government's Ministries of Foreign Affairs and Atomic Energy. They denied any

knowledge of the HEU stored at the Ulba plant. Kazakhstan's government also made inquiries to Russia. A year later, at a press conference, Vitalii Mette, the plant director, declared, "We offered to give it (the HEU) to Russia, but Russia refused."<sup>28</sup> Consequently, Ambassador Courtney received instructions in late summer 1993 to pursue the matter further with the Kazakhstan government. The ambassador's political military officer, Andrew Weber, had been secretly contacted by Mette earlier. Mette wanted to sell the uranium to the United States. Weber listened and tried to find out the exact quantity and enrichment level. The entire issue moved slowly forward in the fall months as Ambassador Courtney and Director Shkolnik held more informal discussions. It was the period that coincided with U.S.-Kazakhstan negotiations over the CTR framework agreement and subsequent implementing documents. These discussions on the HEU materials in Kazakhstan set in motion a year-long effort, one filled with drama and unusual twists and turns.

In Washington, National Security Council officials wanted answers to a series of questions before they would recommend that the U.S. government make any commitments. Specifically, they wanted to know the quality and quantity of the HEU stored in containers in the Kazakhstan warehouse. Then, they wanted to know if it were possible for the U.S. to provide the new nation with material and financial assistance to safeguard the plant, or should they plan to secure, package and transport these materials to the United States for safekeeping. Next, they asked what would be the Russian government's reaction if the nuclear materials were removed from Kazakhstan. What would be the proper level of compensation to Kazakhstan for the nuclear materials? And finally, they asked which U.S. government department should be responsible for conducting the operation, accepting the materials and carrying out the reprocessing? Within the U.S. government, these questions were not only unusual, but the answers were complex and required resolution of numerous legal, financial, policy and bureaucratic issues.

The first question proved to be easiest to answer. President Nazarbayev came to Washington and met with President Clinton in early 1994. In a side meeting, Kazakhstan's president agreed to allow American officials to travel to the plant and survey the nuclear materials. In February 1994, Elwood Gift, a nuclear engineer from the Department of Energy's Oak Ridge Y-12 Plant, and Andrew Weber from the U.S. Embassy traveled to the plant, examined the storage

area, sampled the materials and assayed the U-235 levels. Gift's findings revealed that the HUE materials had been enriched to approximately 90 percent, which meant it was definitely weapons-grade uranium. Further, the amount was approximately 600 kilograms, far more than American officials had anticipated.<sup>29</sup> According to Ambassador Courtney, Weber reported two other issues that caused alarm. Physical security at the Ulba plant was far below standards. "There was metal fence," Courtney explained, "and a babushka, or a woman who would open the metal fence. People could drive their personal cars into and out of the facility without being checked. Padlocks were pretty primitive. There were no alarms by normal standards."<sup>30</sup> Webber also reported that the factory had packing crates, marked for shipping to Iran. This information was alarming, since some analysts believed Iran was seeking weapons-grade materials. In Washington, Gift's scientific conclusions and Webber's observations exploded on the meeting tables and desks of senior policymakers, forcing decisions and action.



Defense Threat Reduction Agency

Andrew C. Weber

National Security Council officials convened senior-level interagency meetings. Ashton Carter from DOD, Robert Gallucci from State Department, and Dan Poneman from NSC, each responsible for nonproliferation policy, met and decided that the Defense Department should take the lead in coordinating U.S. efforts to secure the HEU at the Ulba plant in Kazakhstan. Carter asked Jeffery Starr, Principal Director for Special Operations Program Support

in the Department of Defense, to lead a special interagency "tiger team" responsible for defining options, coordinating proposals and conducting operations. Rather quickly, Starr's team decided the U.S. government should recommend to Kazakhstan that materials should be packaged, transported, stored and then reprocessed in U.S. Department of Energy (DOE) facilities, ones under IAEA standards. Kazakhstan should be compensated financially and materially. They proposed that the U.S. Air Force fly in military aircraft and remove the large quantity of weapons-grade materials. Finally, they recommended the project be treated as secret and the information closely held within the government.

In March 1994 the National Security Council and the President agreed with the recommended proposals, and Ambassador Courtney met with Director Shkolnik, Kazakhstan's Atomic Energy Agency, explaining the proposal and its complexities. Then Courtney accompanied Kazakhstan's Foreign Minister Nourgaliev and Director Shkolnik as they traveled to Washington where U.S. officials proposed purchasing the HEU materials for \$16,000 per kilogram, with the total reaching approximately \$10 million. The next month the U.S. recommended a formal bilateral agreement, including informal consultation with the Russian government. Kazakhstan agreed. During a high-level visit to Washington in June, Vice President Gore informed Russian Prime Minister Chernomyrdin about the U.S. - Kazakhstan agreement on removal of the nuclear materials to the United States. Recognizing a *fait accompli*, the Russian prime minister agreed. Consequently by late June, diplomatic and policy hurdles had been cleared, leaving the way open for removal operations to commence in the summer 1994. Additional glitches, however, within one government and then the other delayed work until fall. President Clinton authorized the Project Sapphire operation to begin in early October 1994.

What happened was remarkable. American and Kazakh nuclear, chemical and industrial engineers, health physicists, packing experts, safety engineers, doctors and Russian interpreters worked together at the plant for six weeks to inventory, package and safeguard the HEU materials. According to Potter, "about two-thirds of the materiel designated for repacking and transport, which totaled approximately 2.37 metric tons (581 kilotons of HEU), was in the form of various beryllium-HEU alloys, including machine scrap and powder."<sup>31</sup> Since they did not meet IAEA



Department of Defense

Loading a U.S. Air Force C-5 aircraft with HEU canisters

standards, the materials had to be removed from the original 1,000 containers and then repackaged into 1,299 stainless steel cans. These cans were then put into 55-gallon drums for transport by truck to a nearby airport and then airlifted to the United States. Alex Riedy, a DOE scientist led the 31-person American team, while Director Shkolnik, Shamil T. Tukhvatulin, and a small Kazakh team led the Kazakh effort. The work was quite difficult and hazardous; the teams worked long days preparing materials for transport; first by road and then by airlift to the United States. On November 19-20, 1994, two U.S. Air Force C-5 cargo aircraft landed in Kazakhstan bringing 40,000 pounds of medical and food assistance. Two days later, they lifted off the runway at Ust-Kamenogorsk air base carrying the highly enriched uranium to a military base in the U.S., where it was loaded onto a truck convoy and transported to the storage facility in Oak Ridge, Tennessee.

A day after the aircraft arrived in the United States, Secretary of Defense Perry, Secretary of State Christopher, and Secretary of Energy O'Leary held a joint news conference at the Pentagon, explaining the secret project to the American public and the world.<sup>32</sup> Christopher praised the cooperation and courage of Kazakhstan's leaders and characterized the operation as a "landmark event" in President Clinton's non-proliferation strategy. He stated categorically that the administration had made non-proliferation a foreign policy goal for the 1990s. O'Leary praised Congressional support and reaffirmed that the HEU materials would be stored in DOE's Oak Ridge Y-12 plants under IAEA safeguard standards. Perry, who was unquestionably the Clinton administration's

strongest supporter of cooperative threat reduction, explained that Project Sapphire was made possible by the Nunn-Lugar program and was "a tremendous success." Acknowledging President Nazarbayev's leadership, Perry declared, "this is global leadership for the post-Cold War era, and it results in no small part from the trust, the understanding and cooperation building between the United States and Kazakhstan."<sup>33</sup>

The United States compensated Kazakhstan for the highly enriched uranium, which was subsequently reprocessed into fuel for nuclear power plants and sold by the U.S. Enrichment Corporation. Kazakhstan received between \$15-\$20 million in cash and materials from this commercial sale and from the CTR program. According to Minister Shkolnik the government purchased \$7.7 million of medical equipment. Specifically: diagnostic equipment, instruments, consumables, syringes and clinical systems were sent to five medical institutions in the Semipalatinsk oblast.<sup>34</sup> The Ulba Metallurgical Plant received \$2.2 million in medical equipment, and set up a patient health-monitoring system equipped with an ultrasound monitoring system and a surgical station. Other compensation went to Kazakhstan's National Nuclear Center. Through the CTR program, it received eight pursuit vehicles equipped with radios and patrol lights, five minivans, eight pick-up trucks, four buses, 20 Nikon cameras, 102 computers, 80 printers, 10 scanners, 10 photocopiers, computer software and medical supplies.<sup>35</sup> In addition, CTR provided equipment worth approximately \$2 million to assist Kazakhstan in establishing a new national export control system. The Department of Energy provided \$500,000 to the Kazakhstan Atomic Energy Committee for preparing for and hosting international IAEA inspections of the nation's former nuclear facilities and test sites.<sup>36</sup> Seven large research and development scientific projects valued at \$7.8 million were financed through the CTR-sponsored Kazakhstan International Science and Technological Center. These projects involved many scientists, engineers and technicians working at the Semipalatinsk Test Site.

Project Sapphire was an unforeseen and unanticipated threat reduction project, one not enumerated in the U.S.-Kazakhstan CTR framework or the implementing agreements. Interestingly, the next major U.S.-Kazakhstan project was also not anticipated in the initial agreements. Equally interesting, it involved Director Shkolnik, Dr. Tukhvatulin, and some of the same American officials in



RIA Novosti

Kazakhstan President Nursultan A. Nazarbayev

Kazakhstan. Like Project Sapphire, this one had its origins in the first years of Kazakhstan's independence. In February 1994, President Nazarbayev and President Clinton signed a joint statement requesting that the United States assist Kazakhstan in "assessing the consequences" of Soviet Nuclear tests at the former Semipalatinsk Test Site.<sup>37</sup> After a series of joint cooperative analytical studies and lengthy bilateral negotiations, that request led directly to a major U.S.-Kazakhstan agreement and a CTR project to analyze, plan, engineer and seal 181 underground nuclear testing tunnels at the Semipalatinsk Degelen Mountain Complex.

### **Sealing the Semipalatinsk Degelen Mountain nuclear testing tunnels**

At the dawn of the Cold War Stalin's nuclear physicists and military planners decided in 1947 to locate the Soviet Union's first nuclear testing site in the remote, unpopulated,

arid Semipalatinsk region of the Kazakh Republic. Using thousands of military laborers, they constructed a large testing complex in a vast plain surrounded on three sides by low mountains. The area was lightly populated with indigenous Kazakh nomads, grazing their livestock on the arid plain. During the Cold War, Soviet governments expanded the Semipalatinsk Testing Site several times; eventually it encompassed 18,000 square kilometers. Between 1949 and 1989, Soviet nuclear weapons designers conducted 456 nuclear tests, including 116 atmospheric and 340 underground tests. Following signing and ratification of the Limited Test Ban Treaty in 1961, Soviet directors at Semipalatinsk developed the Degelen Mountain nuclear testing complex, which became the largest underground test site in the world. Between 1961 and 1989, 224 tests were conducted in large tunnels drilled deep into the mountains. Underground tests were also conducted at Balapan, southeast of Semipalatinsk. There, Soviet weapons designers drilled

vertical holes 500-600 meters deep and then excavated a circular area at the bottom, of up to 900 meters in diameter to accommodate testing devices and instrumentation. The last nuclear test conducted at the Semipalatinsk Test Site took place at Balapan in November 1989. Throughout the four decades of nuclear testing, Soviet and Russian scientist, engineers and military personnel controlled and staffed virtually every position at the test site. The death knell for Semipalatinsk came in August 1991, when President Nazarbayev, then Communist leader of the Kazakh SSR, issued a decree shutting down the test site.<sup>38</sup>

From that point, events moved in an entirely new trajectory. Less than a month later, President Gorbachev issued a moratorium on all Soviet nuclear testing, and following the USSR's dissolution, President Yeltsin reaffirmed that moratorium. Then Nazarbayev signed both the START and NPT treaties in May 1992, and established the Kazakhstan Atomic Energy Agency, assigning it responsibility for interacting with the UN International Atomic Energy Agency and its team of inspectors and experts. Approximately 1.3 million people lived in the region where atmospheric tests had been conducted, and President Nazarbayev stated that 30,000 people had suffered from radiation exposure. He sought international assistance from Russia and the international community for people with cancer and other sicknesses. Ending nuclear testing and shutting down the Semipalatinsk Test Site became a constant, fixed policy for Nazarbayev throughout the 1990s and afterward.

When Kazakhstan enacted its first constitution in January 1993, it established a president-centered unitary government. As president, Nazarbayev derived his power from two sources: the nation's new constitution and the fact he was the nation's most popular politician.<sup>39</sup> A native Kazakh, born in the small rural village of Chemolgan, he worked in the blast furnaces at the Karaganda Metal Complex before shifting to communist party activities. A natural politician, he rose to become the party's first secretary in 1989; the republic's president in 1990, and then as succession swept over the Soviet Union in 1991-1992, Nazarbayev assumed the role of Kazakhstan's national leader. As president, he selected all ministers, judges, diplomats, generals, directors, and national government and local oblast officials. An autocrat, there were few issues the president did not review, decide and approve. He never wavered in his decision to shut down Semipalatinsk Test Site, seeing it as an important a policy decision as his

earlier decision to acquiesce in the return of nuclear missiles, warheads and bombers to Russia. As leader of a small nation, Nazarbayev became an advocate at the United Nations, European and regional forums for nonproliferation treaties and for international humanitarian and medical assistance for victims of nuclear tests. He argued that:

"Shutting down the test site is not simply destroying its deadly infrastructure and banning more testing. It means long years of rehabilitating contaminated lands, recultivating the soil and environment, restoring the biopotential, and helping the sick and mentally affected people who had lived for half a century next door to atomic death. That is a long and difficult process."<sup>40</sup>

In the first years of independence, Nazarbayev sought Russian assistance to close Semipalatinsk and restore the testing site's human and physical environment. Yeltsin and his ministers, however, were more interested in securing agreements to return to Russia all of the SS-18 missiles, the 1,040 warheads and strategic bombers.<sup>41</sup> In Moscow, Russia's Minister of Atomic Energy (MinAtom) slashed funding for the Semipalatinsk Test Site. Consequently, hundreds then thousands of Russian scientists and engineers began leaving Kurchatov, the main testing complex city. They relocated with their families to Russia. Then in December 1993, the Russian General Staff ordered the last military unit at the test site to withdraw its security forces.<sup>42</sup> Essentially, the Russian government, beset with economic, political and internal security problems, abandoned Semipalatinsk; leaving the vast, unguarded nuclear test site to the Kazakhstan government. Yeltsin did tell Nazarbayev that MinAtom would send a small team of Russian nuclear specialists to Semipalatinsk to develop a plan for extracting, or possibly detonating a small 0.4 to 0.5-kiloton nuclear device that remained in one of the tunnels. The Russian government funded that project, which resulted in detonation of the device in May 1995.<sup>43</sup> By that time, President Nazarbayev and his government had moved decisively to engage the United States and the United Nations to assist Kazakhstan officials in determining the scope and dimensions of environmental contamination at the Semipalatinsk Test Site.

Within the Kazakhstan government, Director Shkolnik had responsibility for evaluating contamination levels and

assessing environmental and public health issues associated with nuclear testing site. A nuclear physicist with a degree from the Moscow Engineering and Physical Institute, Shkolnik had a doctorate in physics and mathematics, 20 years experience working with nuclear reactors and nuclear safety in Kazakhstan (BN-350 reactor), and had published more than 130 scientific papers.<sup>44</sup> In 1992 President Nazarbayev appointed him director general of Kazakhstan's Atomic Energy Agency. He engaged with UN International Atomic Energy Agency officials, and invited U.S. nuclear engineers and physicists to Kazakhstan. He worked closely with the U.S. DOE team during the sensitive program Project Sapphire. In 1992-1994 these external contacts were extremely sensitive.

Professor Shkolnik explained that all international agreements were reviewed and signed in the presence of President Nazarbayev, "with his approval and support."<sup>45</sup> Then, as new projects were defined, planned and implemented, Nazarbayev reviewed the work on an "extremely regular basis." Shkolnik explained Kazakhstan was a small nation and that "we had to balance our relations with the Russian Federation and the United States. That was the responsibility of our president. He did all that himself."<sup>46</sup>

At Semipalatinsk, the first task was to conduct a thorough scientific assessment. That was difficult for two reasons. Shkolnik's associate Olga G. Tyupkina explained, "We didn't have detailed documentation on the environmental and technical status, or any information on services, buildings or anything else at the test facility."<sup>47</sup> Everything in the technical area was in "classified" documents controlled by the Russian ministries.<sup>48</sup> This meant Kazakhstan's government had to begin their scientific and technical assessments from scratch. The second difficulty involved the American scientific delegation that had been invited in early 1993 to go to Kazakhstan and assist in assessing contamination at Semipalatinsk. The Russian government would be sensitive if American nuclear engineers examined the nuclear testing site and methodologies. Don Linger, a senior engineer experienced in underground nuclear testing programs, would be leading the American delegation. Director Shkolnik solved this issue by setting up a joint U.S.-Kazakh scientific survey team, then he invited scientists from Russia, United States and Kazakhstan to a subsequent conference in Kurchatov to review the survey team's findings and agree on a series of new cooperative projects.<sup>49</sup>

In the fall 1993, Linger led the American team to Kazakhstan. Working with Director Shkolnik, Shamil Tukhvatulin and other Kazakhstan nuclear scientists and engineers, the two teams began a preliminary assessment of the Semipalatinsk Test Site. At the testing complex's central headquarters, the teams found what one scientist described as "chaos." Russian scientists, managers, workers and their families were abandoning the city. Apartments and office buildings were deserted, security was lax and there was no data to assist teams in formulating a research assessment strategy. Nevertheless, they developed a set of initial projects

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## Semipalatinsk's Degelen Mountain First Tasks

- ★ Documentation
  - ★ Evaluation
- 

focused on identifying radioactive contamination levels at the most critical test sites. Specialists from Kazakhstan's Ministry of Ecology conducted surveys that examined contamination levels of soils and bottom sediments at Chagan Atomic Lake, Degelen Mountain Complex, and Balyktykol Lake. At the Ministry of Agriculture, scientists began long-term surveys of Semipalatinsk to determine levels of contamination on plants and animals in the testing areas. All preliminary surveys and studies were briefed to an international delegation of scientists from the U.S., Russia and Kazakhstan meeting in Kurchatov in November 1993. All participants recall the spartan conditions; hotel rooms were cold, meeting rooms frigid and pipes frozen. The city was isolated and abandoned.

Nevertheless, work proceeded and out of this conference and subsequent bilateral meetings, Shkolnik and Linger developed a list of U.S.-Kazakhstan CTR projects for Semipalatinsk. The first project would identify categories of data and the level of analysis needed to determine radiation levels across the entire testing complex. Next, there would be a project to assist Kazakhstan in defining requirements for a comprehensive Semipalatinsk Test Site data base, including site assessments, environmental projects and reclamation efforts. Then scientists from the two nations planned to carry out a project to conduct field surveys and measurements, field

samplings and laboratory analysis of the radioactivity levels in 10 Semipalatinsk test site areas. Funded by CTR, these projects were carried out in 1994-1995, and included a U.S. remote sensing survey of the ground surface across the entire testing site.<sup>50</sup> At international conferences and in informal contacts, Shkolnik shared data with Russian scientists and nuclear complex directors. Shkolnik and Linger developed another CTR project, the Degelen Mountain Tunnel Characterization Program that contracted with Kazakhstan's National Nuclear Center to carry out geological and radiological characterization studies of the 181 hard rock tunnels. Following this extensive



Don Linger (l.) and Vladimir Shkolnik (r.) at Degelen Mountain Complex

survey, Tukhvatulin signed another CTR contract to conduct a field survey of the test holes in the Balapan Testing Field. As this new data was analyzed and evaluated, Linger suggested to Shkolnik that the Kazakhstan government consider closing and permanently sealing the Degelen Mountain tunnels. Within weeks, Shkolnik, now Minister of Science sent a formal letter to Secretary of Defense Perry requesting CTR financial assistance.<sup>51</sup>

This project was not part of the basic U.S.-Kazakhstan framework agreement signed by Vice President Gore and President Nazarbayev in December 1993. That agreement focused principally on the U.S. providing assistance to Kazakhstan for destruction of fixed ICBM launchers and strategic bombers, and to provide emergency response equipment, and to support the non-proliferation of nuclear weapons. Although the latter category was vague, it usually meant providing assistance to prevent nuclear smuggling or, in the case of Russia, to assist in transporting nuclear materials and secure them in nuclear storage facilities. In

1994-1995, in Kazakhstan the framework agreement had been used to authorize the CTR scientific surveys and study projects evaluating the Semipalatinsk Test Site and fund Project Sapphire. Now Minister Shkolnik requested formally that U.S. CTR assistance be used for the large-scale, multi-year project to seal all 181 tunnels. That meant it was up to DOD leaders, policy officials and lawyers to define the U.S. government's obligations and responsibilities. Professor Tukhvatulin explained there were two reasons Kazakhstan wanted to move ahead quickly.<sup>52</sup> The Degelen Mountain Complex posed a real environmental threat since animals and people were going into the unsecured tunnels, possibly exposing themselves to secondary radiation. In addition, President Nazarbayev wanted the international community of nations to witness Kazakhstan's efforts to close the nuclear testing site, permanently.

The United States had other reasons. General Roland Lajoie, head of the Defense Department's CTR Office, said that at first he was skeptical of the project. "As far as it being a specific threat," Lajoie recalled, "the notion that these old tunnels might be reused for nuclear testing by an independent Kazakhstan, seemed to me somewhat far-fetched."<sup>53</sup> Others thought otherwise. Ashton Carter, Assistant U.S. Secretary of Defense for International Security Policy argued the project supported President Clinton's nonproliferation policies and that it had the support of Senators Nunn and Lugar. Further, Carter argued it was not an expensive project since cost estimates for sealing all the tunnels was only \$6 million.

Secretary of Defense Perry placed the proposed tunnel project squarely in the realm of cooperative threat reduction. He argued that this multi-year project, like the removal of highly enriched uranium from Kazakhstan, constituted part of new security strategy for the United States; one he characterized as "Preventive Defense."<sup>54</sup> Assisting Kazakhstan to permanently shut down and seal 181 underground nuclear testing tunnels, he argued, reduced the opportunity for future testing of new weapons of mass destruction and their technologies. Perry authorized the project in early 1995. Following bilateral negotiations, Minister Shkolnik and Kasymzhomart Tokayev signed a new CTR agreement on "The Elimination of Nuclear Weapons Infrastructure" in Almaty in mid-September and in Washington in early October 1995, respectively.<sup>55</sup>

Work began quickly. In Kazakhstan, Shkolnik, Tukhvatulin and Tyupkina supervised and monitored every aspect of the

multi-year program. From the United States, Don Linger, Larry Gabriel, Luke Kluchko and a small team of American tunnel experts traveled to Kazakhstan periodically, staying in a temporary base camp at the Degelen Mountain Complex during the closing and sealing of tunnels. Planning began in the fall and winter of 1995 as the joint U.S.-Kazakhstan team began meticulous analysis of the 181 tunnels. Using data amassed in the Degelen Mountain Tunnel Characterization Program, the team developed a 10-point analysis for each tunnel that included radiological measurements, geological characterizations, measurements and characterization of water sources, water accumulation and leaks, analysis of the water samples for gamma emitters and tritium, and photographs and videotapes. The leaking tunnels required special monitoring procedures: daily measurements of precipitation, monthly measurements of air, water and water inflow temperatures at the tunnel portal, and quarterly analysis of the samples.<sup>56</sup> Using this analysis, the team developed a plan for sealing each tunnel. For the entire effort, the plan included provisions for radiation safety, mine safety, equipment and personnel safety, cost estimates, budget and spending plans, and environmental and managerial reviews. Before any work could begin, both governments subjected plans to a review by experts. In Kazakhstan, technical experts from the Ministry of the Environment and the Agency for Emergency Situations examined the plans for sealing each tunnel prior to work commencing.<sup>57</sup>

In the United States, program and technical experts at the Defense Nuclear Agency (DNA) went over plans examining the engineering, radiation safety and environmental requirements. Linger assigned Luke Kluchko, a Defense Nuclear Agency acquisition specialist, to be the CTR program manager, responsible for cost estimates, acquisition strategy, contracts and contractor performance certifications.<sup>58</sup> Linger and Kluchko decided, for a number of reasons, not to use an American integrating contractor. Instead, they argued the DNA would serve as general contractor, issuing a firm, fixed-price contract with Kazakhstan's National Nuclear Center. While there was some risk, Kluchko explained there were advantages in working with the national government's nuclear agency, an organization based in Semipalatinsk; one with good leadership and a record of working cooperatively with the United States.<sup>59</sup> Sealing these environmentally dangerous nuclear testing tunnels was important to the Kazakhstan president and government. Consequently, designating the

National Nuclear Center as the lead organization fixed contractual and operational responsibility in a single national agency. The center's contract stipulated that 60 tunnels would be eliminated per year. In the United States, Kluchko hired experienced tunnel engineers, geologists, construction engineers, safety experts and industrial hygienists to travel to Semipalatinsk on temporary duty and work on-site with the Kazakhs. Linger oversaw the entire program, traveling to Kazakhstan, meeting with Minister Shkolnik, and going out and reviewing the work at the remote Deglin Mountain Tunnel Complex.<sup>60</sup>

Less than six months after the CTR agreement was signed, the first tunnel was closed and sealed on April 1, 1996. It was a demonstration project that confirmed the methods and procedures used in subsequent tunnel closures. Drilling, blasting and collapsing the opening, or portal, of the horizontal tunnels were considered to be the optimal method for closure. A second method was used when radiation levels were elevated, or if ground water had accumulated significantly from underground springs. In those cases, large concrete plugs were inserted into openings of the tunnels. There was a division of labor and management at the mountain complex site. Kazakhstan's National Nuclear Center had responsibility for carrying out all aspects of the contracted work, including tunnel preparation, implanting scientific measurement devices, setting explosive charges, sealing the tunnels and continuous monitoring of radiation and environmental levels. At the site, American experts provided technical guidance, quality control and certification of the work. Payment in American dollars followed certification.<sup>61</sup>

Kazakhstan's National Nuclear Center in Kurchatov had five scientific institutes and one enterprise, the Deglin Mining Enterprise. Tukhvatulin assigned scientific survey and monitoring work to the institutes and the work of preparing and sealing the tunnels to the mining enterprise.<sup>62</sup> Led by Vladimir Kovalyov, the mining firm used many of the same skilled workers – miners, drill operators, tunnelers, blasters and explosive technicians who had dug the original tunnels. Approximately, 150-200 Kazakhs worked for three years to complete the closure program, first at the Degelen Mountain Complex, then at the Balapan Testing Field. Everyone recognized there was a considerable difference, sometimes decades from the time that mountain tunnels and testing holes were drilled and excavated. This time, however, Soviet



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### Sealing Degelen Mountain Nuclear Testing Tunnels

engineers would not be in charge; Kazakh engineers would be, with advice from American tunnel experts. In addition, contemporary concerns about radiation, ground water pollution, mine safety, site security and sealing the tunnels permanently would change the nature and tempo of the work. Tukhvatulin lived at Semipalatinsk, and was responsible for certifying every tunnel closure. He recognized the differences: "This was an exceptional case," he explained, "where there was a nuclear test facility in a non-nuclear state."<sup>63</sup> All work had to meet international safety and environmental standards.

At the Degelen Mountain Complex, things went like clockwork, with 58 tunnels prepared and sealed by January 31, 1997. The following year, another 64 tunnels were closed and sealed, and the final echelon of 57 tunnels was finished in 18 months, by June 1999. Sealing these former nuclear testing tunnels had international significance; the international media published and broadcast articles and programs on the tunnel closures frequently.<sup>64</sup> The scientific community discussed the Degelen Mountain Complex project at numerous international meetings and conferences, including the International Conference on Nuclear Weapons Nonproliferation, held in Kurchatov in September 1998.<sup>65</sup> Kazakh and Russian nuclear scientists and specialists held a series of coordinating group meetings in Kazakhstan to review technical aspects of the program and recommend environmental protection measures for the closed nuclear test range.<sup>66</sup> President Nazarbayev and senior diplomats introduced a draft resolution at the UN General Assembly addressing radiation and decontamination problems at the Semipalatinsk Test Site. More than 50 nations supported this UN resolution.<sup>67</sup> William Leith, U.S. Geological Survey,

recorded and filmed tunnel blasts and closures for the CTR program in two video documentaries; subsequently, these CDs were released to the public.<sup>68</sup>

At some point in the fall of 1996 as the tunnel closures were proceeding ahead of schedule, Linger told Kluchko that, "nature abhors a vacuum ... and in Degelen's case it's a perfectly good hard rock tunnel."<sup>69</sup> What did he mean? The United Nations' Comprehensive Test Ban Treaty (CTBT) had



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Explosion test of nuclear testing tunnel under United Nations Comprehensive Test Ban Treaty

just been concluded, and Linger was thinking, just thinking, about using one of the old testing tunnels or holes at Degelen to conduct a blast experiment that would test acoustic and seismic monitoring systems authorized by the UN treaty for verification. For Linger and others, the scientific question was whether a conventional test explosion, one detonated in a deep tunnel or buried shaft, could be distinguished from a blast using nuclear explosives. The scientific community had data from past U.S. and Soviet nuclear tests. Now they proposed to set off conventional explosives in Kazakhstan's nuclear testing tunnels to determine if there was a measurable difference. When Linger explained the idea to Shkolnik, he was intrigued, seeing the chance for Kazakhstan to become an international leader in non-proliferation. Olga Tyupkina recalled that Linger advised them to be cautious at first, using the metaphor of dragging "a large camel into a small tent." Continuing, he explained, "when you don't know how big your camel is and how much room there is in the tent, the most important thing is to shove the camel's nose into the tent!"<sup>70</sup>

By March 1997, Linger had secured U.S. funding and approval to contract with the Kazakhstan National Nuclear Center to design three 25-ton chemical explosions in conjunction with closing of vertical nuclear boreholes in the Balapan test field. There were 13 unused boreholes that had been drilled in different geological and hydrological rock formations to test the effects of nuclear weapons experiments. These boreholes were located over a large geographical area adjacent to the Degelen Mountain Complex. The three tests detonated chemical explosives placed at 50, 300 and 550 meters. They used a Russian-made TNT product, one used in commercial mines, with blast effects recorded on acoustic and seismic networks. According to Kluchko, the results were spectacular and proved that, "many near-surface mining blasts could be distinguished from deeper underground nuclear tests."

<sup>71</sup> This was an important, significant finding for future verifications of the Comprehensive Test Ban Treaty.

A short time later, Minister Shkolnik recommended to the CTBT Preparatory Commission that it consider using the Degelen Mountain Complex for a test of the new international monitoring system. That system, just being established, would consist of 321 monitoring stations located in treaty nations around the globe. These stations would gather seismic, infrasound, hydro acoustic, and radionuclide

data, and transmit it to 16 certified analytical laboratories.<sup>72</sup> Shkolnik's recommendations led to plans to conduct three separate 100-ton chemical explosive tests in two of the Degelen Mountain nuclear testing tunnels that had been prepared but never used. Known as the "Omega" tests, these would be the final experiments at Degelen Mountain test site before the tunnels were permanently sealed.<sup>73</sup>

The three chemical explosive tests, one each in August 1998, September 1999 and July 2000, were recorded by the CTBT international monitoring system.<sup>74</sup> In many nations, scientists were concerned about detecting underground nuclear explosions detonated in India, Pakistan or China, nations that had not declared recent moratoriums on nuclear testing. In addition to seismic monitoring, U.S. experts placed other instrumentation in the Degelen tunnels capable of acquiring data on velocity and direction of the shock wave within the high explosive as it detonated. Additional devices measured sound waves being transmitted in the atmosphere. The magnitude of these blasts was greater than 4.0. Again, results exceed expectations; seismic stations as far as Alaska and Africa recorded time, location and size of the explosion.<sup>75</sup> Linger told a *New York Times* reporter, "the tests would enable seismic stations throughout the world to 'calibrate' their equipment and help scientists distinguish between a natural event, like an earthquake, and a bomb test."<sup>76</sup>

After the final chemical explosives tests were completed at Degelen Mountains in July 2000, the last tunnel was sealed. However, this did not end Kazakhstan's interest in monitoring nuclear tests around the world. Examination of results from the "Omega tests" revealed to Minister Shkolnik that Kazakhstan could serve as an ideal territory for future monitoring of nuclear testing in the region. Seismic waves from any nuclear test would encounter minimal resistance from northeastern Kazakhstan's topographical and geological formations. Additionally, the nation was located at the very center of Eurasia, in a low point on the continent, which would enable it to monitor and capture seismological calm points. Subsequently, scientists at Kazakhstan's National Nuclear Center and the Lamont-Dougherty Atmospheric Observatory of Columbia University developed a joint project to set up a series of eight wideband seismological stations that would be able to monitor and characterize natural, commercial and nuclear explosions. These stations would become part of the CTBT's international monitoring system.<sup>77</sup>

## Destroying Kazakhstan's SS-18 silo launchers: a classic fit

Strategic weapons invented, tested and fielded in one era can make little or no sense in a new era. The 104 SS-18 long-range ballistic missiles based in Kazakhstan illustrate this point. The SS-18s were large, modern, two-stage liquid propellant strategic rockets that were deployed in concrete and steel reinforced fixed silos. The Soviet Union's military-industrial complex and Strategic Rocket Forces developed, manufactured and fielded six SS-18 strategic rocket divisions during the final decades of the Cold War. Two were located on Kazakhstan territory: the 38<sup>th</sup> Missile Division (52 SS-18s) based at Derzhavinsk and the 57<sup>th</sup> Missile Division (52 SS-18s) located at Zhanqiz-Tobe.<sup>78</sup> Operated and maintained on continuous alert, these massive strategic rockets could be fired from silos using a cold-launch technique. According to estimates, the SS-18 silos had been constructed to a hardness factor of 4,000 – 6,000 psi, making them capable of surviving a first strike and then launching.<sup>79</sup> Each of the 104 SS-18s on Kazakhstan territory was capable of delivering 10 nuclear warheads.

Once the Cold War ended, these modern ICBMs provided no military security for the new nation of Kazakhstan. In fact, they created friction between Russia and Kazakhstan. Russia's Ministry of Defense asserted the SS-18 missiles, their nuclear warheads, as well as one squadron of Tu-95 heavy bombers in Kazakhstan were part of its strategic military forces. The Russian General Staff directed the Strategic Rocket Forces to continue operating the SS-18 missile forces on alert throughout 1992. Few if any Kazakh officials had access to these military bases.<sup>80</sup>

During 1993-1994, however, the geopolitical situation changed dramatically. The Russian General Staff ordered the rocket divisions and bomber squadron based in Kazakhstan be deactivated and the SS-18 missiles, Tu-95 bombers and 1,040 nuclear warheads be withdrawn to Russian bases and storage depots. President Nazarbayev signed and the parliament ratified the START, NPT and CFE arms control treaties and international agreements. Kazakhstan joined the United Nations, Organization for Security and Cooperation in Europe, and regional organizations. Vice President Gore and DOD officials traveled to Almaty where Gore and Nazarbayev signed the CTR framework and implementing agreements. The highly sensitive Project Sapphire was

initiated, negotiated and was in its final planning stages. At the Semipalatinsk Test Site, multiple scientific evaluations were initiated and the joint CTR agreement to seal the Degelen Mountain Tunnel Complex had been signed and the project would soon be implemented. Consequently, Kazakhstan's future was as a non-nuclear state, one with American, Russian and other nations' assistance. These major changes were underway when Nazarbayev and Yeltsin met in Moscow March 1994. There they signed a series of new bilateral agreements on disposition of the remaining strategic nuclear forces and facilities in Kazakhstan. These agreements directly influenced the definition of the U.S.-Kazakhstan SS-18 silo dismantlement project.

Even before the two presidents met, there were developments that signaled significant changes. In January 1994 Colonel Jim Reid remembers traveling to Almaty with an American CTR delegation less than a month after Vice President Gore and President Nazarbayev had signed the CTR framework agreement. United States and Kazakhstan defense officials discussed and defined specific projects, such as environmental surveys of the Semipalatinsk Test Site, providing new emergency response equipment, and equipping a new arms control center with modern communications and computer equipment. In these meetings, Major General Alibek Kasymov, First Deputy Minister of Defense asked Colonel Reid to brief them on what the United States Air Force had done to mitigate environmental damages when it eliminated its ICBM missiles and bases.<sup>81</sup> Press and television reports in Moscow alleged that strategic nuclear weapons in Kazakhstan were poorly maintained and not secure.<sup>82</sup> "So we gave them the briefing," Reid recalled, "then we gave them a list of questions they should ask the Russians."<sup>83</sup>

Two weeks later, Russian Colonel General Nicolai Solovtsev, Commander of the Strategic Rocket Forces, and a military delegation arrived in Almaty to formalize terms for a bilateral agreement on withdrawing the two missile divisions, removing missiles, nuclear warheads, missile fuel components and sensitive equipment.<sup>84</sup> Major General Kasymov, Kazakhstan's Minister of Defense, raised environmental issues and the two military officers agreed on a Russian plan and established a working group of Russian and Kazakh officers. These meetings were the beginning of a three-way technical dialogue among Russian, Kazakh and American military officers and civilians on division of labor for dismantling the SS-18 missile systems. Subsequent

Russian and Kazakh discussions in January and February 1994 led to new bilateral status of force agreements.

Yeltsin and Nazarbayev signed these agreements in Moscow in March 1994, declaring Russia had full jurisdiction over the missile forces, and that Russia would assume responsibility for nuclear safety, weapons security, missile maintenance and all strategic rocket forces and facilities. Yeltsin committed the Ministry of Defense and Strategic Rocket Forces to remove all nuclear warheads within 14 months, by June 1995; and all SS-18 missiles within 36 months, by March 1997.<sup>85</sup> Two months later, Russian officials declared that as partial compensation for the HEU in the nuclear warheads, Kazakhstan would receive military aircraft: 29 MiG-29s, 14 Tu-25s, and 38 SU-22s.<sup>86</sup>

Other strategic weapons on Kazakhstan territory were 40 Tu-95 heavy bombers equipped with 370 air-launched cruise missiles capable of delivering nuclear warheads. In February 1994 the Russian Air Force ordered these bombers flown from their base at the Chagan Aerodrome in Semipalatinsk to Russian military air bases. Over the next year, the Tu-95s squadron's cruise missiles and warheads were deactivated, packaged and transported from Kazakhstan to Russia, with the last shipment leaving in April 1995.<sup>87</sup> In the same period, the Russian General Staff directed General Maslin, 12<sup>th</sup> Main Directorate, to remove the missile division's warheads from weapons depots at Derzhavinsk and Zhangiz-Tobe. In late April, Colonel General Igor Sergeyev, Commander of the Russian Strategic Rocket Forces, announced in Moscow that all nuclear warheads had been withdrawn from Kazakhstan.<sup>88</sup>

At the SS-18 missile bases, special Russian engineering teams of military officers and specialists traveled by convoy to remote missile launch sites, defueled the SS-18 missiles and then lifted the missiles in their canisters out of the silos. They were placed into special missile transport vehicles and driven to railroad transfer points for rail shipment to Russia. The process was similar to that in Ukraine where General Mikhtyuk and the 43<sup>rd</sup> Rocket Army deactivated the SS-19 and SS-24 missiles regiment by regiment, transporting missiles to temporary storage areas and then, with U.S. assistance, sending them by rail to dismantlement facilities in Pavlograd, Ukraine. The difference in Kazakhstan was that the Russian 38<sup>th</sup> and 57<sup>th</sup> Missile Division commanders, officers and men organized and carried out all the work; Kazakhstan's government was informed, but did not participate.

As the deactivation and dismantling work unfolded in the missile fields, technical dialogue among Russian, American and Kazakhstan specialists started discussions over division of labor, completion schedules, and the amount and condition of residual equipment and missile facilities. Tentative at first, then through intermediaries, and ultimately direct, the three-way dialogue developed into the following understandings: the Russian Ministry of Defense would remove nuclear warheads from missile division and air squadron depots, package and secure the sensitive parts and transport them via rail to Russia. The Strategic Rocket Forces' operational divisions would defuel the SS-18 liquid missiles,



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Destruction of a SS-18 ICBM silo

removing them from launch silos and transporting them to missile bases in Russia. Then Russian rocket officers would strip the launch silos and launch control centers of sensitive items, then package and transport them to Russia. Finally, the Russian Ministry of Defense stated it would remove the head works at the launch silo sites and blast the silo to a depth of six meters as required by the START Treaty.<sup>89</sup> Kazakhstan agreed to accept the abandoned bases, roads, residential

## With Courage and Persistence

facilities, underground launch control centers, buried cables and all other associated property.<sup>90</sup> The United States agreed to finance, through the CTR program, local Kazakh firms to assist the Russian SRF missile division commanders destroy the launch silos.<sup>91</sup> In 1995, a small CTR contract was awarded to two Kazakh firms, KATEP and Montazhspetzstroi, to carry out preparatory dismantlement work at the SS-18 silo launch sites.<sup>92</sup> Detonation experts from the Russian SRF placed the explosives and blasted every silo. No American officials were present.

Removing the SS-18 missiles and warheads from Kazakhstan to Russia went faster than planned. By April 1995 all of the 1,040 warheads had been transported to Russia two months ahead of schedule. Removal of SS-18 missiles, liquid fuel and sensitive equipment went efficiently and on-schedule. The large SS-18 launch silos had been destroyed more quickly than anticipated. In March 1994 President Yeltsin declared that everything would be completed in 36 months. The work, however, was finished in 17 months. General Igor Sergeyev, commander

of the SRF, announced in August 1996 that all missiles, fuels and equipment had been removed to Russia and that all the missile division's forces would be withdrawn within ninety days.<sup>93</sup> At a press conference, General Sergeyev summarized the SRF's work in Kazakhstan: 16 missile regiments had been decommissioned and disbanded, 898 warheads, 98 intercontinental ballistic missiles and more than 18,000 metric tons of missile fuel components had been transported to Russian military sites and 104 combat silos for the SS-18s and two training silos had been dismantled. Under a bilateral Russian-Kazakhstan agreement, General Sergeyev explained the SRF would transfer to the Kazakhstan Ministry of Defense approximately 1,000 kilometers of access roads, 4,000 kilometers of power cable, and 900 kilometers of communication cable, base residential facilities and other properties.<sup>94</sup> In September 1996, Kazakhstan received the Derzhavinsk base and missile complexes. In October, they accepted Zhangjiz-Tobe. General Sergeyev stated the Russian SRF would not be present in Kazakhstan after that point. It was at this point that the United States became active,



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Destruction of a SS-18 ICBM silo

through the CTR program. It worked with the Kazakh government and local firms to dismantle and destroy SS-18 launch silo complexes, launch control centers and missile base facilities.

Colonel Reid, Major John Petito, and Commander Mike Demio of the CTR Program Office negotiated the scope of the work with Viktor A. Papst, Alexander N. Golev, and Karzhaubay Sh. Khusainov of Kazakhstan's Center for Defense Industries.<sup>95</sup> President Nazarbayev established a State Commission for the Elimination of Strategic Offensive Armaments consisting of the government's principle ministries, with the Center for Defense Industries designated as the commission's working agency. The scope of work was considerable. The United States Congress, the President, and Secretary of Defense had committed through agreements to President Nazarbayev that American CTR assistance would go far beyond the START's silo dismantlement requirements. Within the Defense Department, CTR officials estimated the strategic offensive arms elimination (SOAE) program in Kazakhstan would cost approximately \$76 million and take two to three years to complete.<sup>96</sup> As in Ukraine, CTR assistance to Kazakhstan would encompass acquisition and delivery of new dismantlement equipment, training, technical assistance, project management and program oversight. Colonel Reid decided to use an American integrating contractor to manage the Kazakhstan silo elimination program. After a series of negotiating meetings, the two sides agreed that the joint U.S.-Kazakhstan SS-18 silo elimination program would dismantle and remediate 148 silo complexes and associated facilities:

- 61 silo launchers in Derzhavinsk
- 61 silo launchers in Zhangiz Tobe
- 14 test silo launchers in the Balapan Test Site
- 12 test silo launchers in the Leninsk Test Range<sup>97</sup>

Following an open competition to select the integrating contractor, Brown and Root, a Houston, Texas, international company won the \$31 million bid in November 1995 to destroy the 148 SS-18 silo complexes, buildings and infrastructure.<sup>98</sup> In winning the bid, Brown and Root paired with a Swiss engineering firm, ABB SUSA. This contract followed a pattern established in Ukraine, where the American integrating contractor was instructed to work with local firms to carry out the bulk of the elimination work.<sup>99</sup> In March 1996, Brown and Root subcontracted

with the Institute of Chemical Sciences of the Academy of Sciences in Kazakhstan to conduct environmental surveys at Derzhavinsk and Zhangiz-Tobe. Two chemists, Professor Victor A. Solomin and Dr. Vladimir Lyapunov led the work, making an assessment of pollution levels at the bases and missile silos, taking soil samples, toxic chemical samples and collecting contaminants. "The job was interesting," Professor Solomin recalled, "We had two teams, two sampling teams. One worked at Derzhavinsk, and the other team worked at Zhangiz-Tobe."<sup>100</sup> As the Kazakh scientists were arriving, Russian military commanders were completing removal of the last missile regiments and withdrawal of the forces. Within six months, the Russian military had gone, turning over abandoned missiles sites and base facilities to the Kazakhstan government. By that point, Brown and Root had developed a comprehensive work plan, subcontracted with several Kazakhstan firms and had started the process of securing approvals from government bureaucracies to launch the silo complex dismantlement and remediation work.

At the working level, three entities managed and implemented the SS-18 silo dismantlement program. Luke Kluchko, the U.S. program manager, oversaw the Brown and Root contract. Kluchko was already involved in Kazakhstan, managing funding and special contracts for the Degelen Mountain Tunnel Sealing program. Every four to six weeks he would travel to Kazakhstan, spending 10 days or more meeting with the American and Kazakh contractors, reviewing the work, authorizing payments, and discussing every aspect of the two programs with Kazakh officials.<sup>101</sup> The U.S. CTR program provided dismantling equipment, training and managerial services.

Within the Republic of Kazakhstan, a senior-level state commission consisting of officials from the Ministries of Defense, Interior, Foreign Affairs, Ecology and other entities set policy, coordinated issues and monitored the program closely. The working agency for Kazakhstan's State Commission for the Elimination of Strategic Offensive Armaments was the Center for Defense Industries. Located in Almaty, the center hosted most of the U.S.-Kazakhstan working meetings and conferences on SS-18 silo dismantlement and subsequent programs.<sup>102</sup> The third entity was the American integrating contractor, Brown and Root. With offices in Almaty and base camps at Derzhavinsk and Zhangiz-Tobe, the contractor and staff managed every aspect of the program. Five Kazakh firms were subcontracted to do the work: Almatypromstri



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deconstruction work plans and work methods on-site. The most difficult work was demolition of the massive steel reinforced silo lid. Russian Strategic Rocket Forces had blasted the lid open and they left it lying at the site in accordance with the START Treaty protocols. The Kazakh subcontractors' task was to blast it apart and salvage the steel for recycling and resale. Chief engineer Toropov explained the job.<sup>106</sup>

JCS, KATEP JCS, Montazhspeztstroï AHK, National Nuclear center, and the Institute for Chemical Sciences.

Out in the missile fields, work at each SS-18 missile silo complex and launch control center followed a similar pattern. It began with an environmental assessment to determine the levels and types of contamination facing worker safety and health. The massive launch silos were then destroyed, using explosives and earth moving equipment. In the process, subcontracting firms were required to salvage all materials of value and transport them to storage areas. At the missile bases, launch complexes, and launch control centers, workers dismantled and destroyed designated buildings and facilities; rubble was buried on-site or removed to government approved storage areas. All harmful materials or contaminants were removed from the sites. Finally, the sites were covered in soil or dirt to one-and-a-half meters and restored to their original topography.<sup>103</sup> Murat Bektemisov was general director of Almatypromstri JCS, the Almaty construction firm that won the SS-18 silo elimination subcontract from Brown and Root. For three years, 1996-1999, eliminating SS-18 missile complexes and launch control centers was the company's major work. Bektemisov explained: "All industry in Kazakhstan began to decline at that time. This project was essential. It was worth about \$15 million and the job involved about 1,000 – 1,500 people (in our firm). The work was good, it was of major importance to us, and profitable."<sup>104</sup>

Alexander Toropov, the firm's chief engineer, sent construction crews to four sites: Zhangiz-Tobe, Derzhavinsk, Balapan and Leninsk. They set up camps for 200-300 men at the missile launch complexes. Before the men arrived at the remote sites, the firm commissioned topographical surveys of each launch complex. They photographed every structure, videotaped the entire complex and made engineering drawings of every structure.<sup>105</sup> These materials, shared with Brown and Root managers and construction engineers, influenced cost estimates, dismantlement and

We had to dismantle the metal structures remaining after the main explosion, including the barbican and cover, which were built to be indestructible. The primary design principle for these structures was to make them very difficult to destroy. Therefore, we looked at a number of options to dismantle these structures and concluded the best method was to use explosives. We developed an explosion technology whereby we first made a hole so that we could get through the cover and then placed charges inside the structures so we could blow them from within. For the explosions, we used shells that had to be destroyed because their storage life had expired. Afterwards, we gathered the blown up pieces of metal because they were scattered over a large area and shipped them to metallurgy plants. It took about six and a half tons of explosives for one silo.

The next phase was to develop the land and make preparations to fill in the silo with concrete – the surrounding soil and debris from the dismantled structures were dumped and packed into the remains of the silo. Around the silo, there were structures such as power substations and sentry buildings, as well as training buildings near several silos that we demolished mechanically with an excavator. The debris was loaded into the silo and compacted and then we capped the silo with concrete. The remainder of the site was filled in, leveled out and restored to its original appearance.

Due to harsh winters, work on the SS-18 missile complexes began in late March and finished in late October. William Suzuki, Brown and Root's program

manager explained they would assemble modular units at the missile bases each season and he would have his project managers live and work on-site.<sup>107</sup> The Kazakhstan companies would have 200-300 workers living at the SS-18 silo sites during the destruction, salvaging and transporting phases. The missile site was quite large and the launch complex included the massive silo lid (120 metric tons), reinforced steel launch silo (40 meters deep, seven meters wide), bunkers and underground tunnels (100 meters in length), guard buildings and maintenance sheds. The chief engineer explained the project. Kazakh explosive experts would detonate the silo lid, underground tunnels, and other buried structures. They would salvage and haul away any materials that could be reprocessed. Then they bulldozed the remaining rubble into the deep silo, until it filled up to approximately a meter and a half below the surface. Finally, they poured a concrete cap and covered it with soil to conform to the existing terrain.<sup>108</sup> Starting in 1996 and finishing three years later in 1999, the SS-18 silo launcher elimination and reclamation program

went smoothly, with 147 silos destroyed at Zhangiz-Tobe, Derzhavinsk, Balapan and Leninsk.<sup>109</sup> The final figure was one less silo complex than planned; Kazakhstan agreed to a Russian request that one site be saved for technical reasons.

In evaluating the effort, the two governments concluded that the model of using national program managers, an integrating contractor and national firms as subcontractors had worked well. It cost the U.S. government more to use the integrating contractor, approximately 40 percent more. "However, when it was all said and done," Kluchko concluded, "the bottom line was that Brown and Root completed this project nine months ahead of schedule and \$5 million under budget."<sup>110</sup> Victor Pabst, the Center for Defense Industries senior program manager, admitted that initially there were many disputes between the American corporation and Kazakh firms, but these diminished as the project moved into its second and third work season. "The situation improved and we observed almost no problems or conflicts," Pabst concluded. "We were even glad," he added, "that the general contractor was a U.S. company. Why? Because of its



Destruction of SS-18 ICBM launcher ring

National Archives - Still Picture Branch

procedures and requirements we were able to complete all project tasks in their entirety.”<sup>111</sup> Murat Bektemisov, general director of Almatypromstri JCS, the Almaty construction firm, concluded that, “most importantly, we learned how to do business from Brown and Root.”<sup>112</sup> Bektemisov’s construction company became one of the Kazakh firms constructing new facilities for international corporations exploring the Caspian Sea oil and gas fields.

### Eliminating abandoned strategic bombers in Kazakhstan

In February 1994, the Russian General Staff ordered the 40 Tu-95 Bear H strategic bombers based at Chagan aerodrome in Kazakhstan to prepare to relocate to military air bases in Russia.<sup>113</sup> A remnant of the host air force squadron would remain at Chagan for a year to work with Russian 12<sup>th</sup> Main Directorate technical officers deactivating, packaging, and transporting the 340 air-launched cruise missiles and nuclear weapons to Russia. Finally, by the spring of 1995 the Russian air force squadron left, abandoning the base,

its facilities, and seven obsolete, inoperable Tu-95 bombers. When Kazakhstan’s Ministry of Defense acquired the base, it inherited the seven Bear H bombers, which were subject to elimination under the protocols of the START Treaty.<sup>114</sup> In 1997, Kazakhstan’s Defense Minister requested and the U.S. Defense Department agreed that the CTR program would provide equipment and services to eliminate these obsolete bombers. The Ministry of Defense declared it would manage and carry out the bomber elimination program if the United States would provide the equipment, training and logistical services. Following a series of technical meetings and agreement on a joint plan of work, John Booker, CTR program manager, moved quickly in the spring of 1997 to purchase and deliver new cranes, cut-off saws, cutting saws, trucks, tools, office equipment, and supplies for a small medical station to Kazakhstan.<sup>115</sup> By fall, most of the equipment had arrived at the remote Chagan air base near Semipalatinsk. The Ministry of Defense hired local Kazakh firms and they eliminated the bombers in November and December following the elimination protocols in the START Treaty.<sup>116</sup>



Defense Threat Reduction Agency

Elimination of Tu-95 Bear bombers

To confirm compliance, the United States sent a START Treaty inspection team to Kazakhstan in January 1998. When Air Force Lieutenant Colonel Thomas Burwell and his ten-member inspection team arrived in Almaty, they were met by Colonel A.A. Mendygliev and an escort team from the Kazakhstan Arms Control Implementation Center.<sup>117</sup> Together the two teams flew to Semipalatinsk, then they went by bus to Chagan where the Americans confirmed visually that the bombers had been eliminated in accordance with the treaty. Burwell and Mendygliev signed and exchanged inspection reports, and the team flew back to the capital of Almaty. The American team departed early the next morning on the one daily flight from Almaty to Frankfurt, Germany where they transferred to a flight for Washington, D.C. From 1993 to 2000, the United States sent more than 20 treaty inspection teams to Kazakhstan; Colonel Mendygliev and the center's officers escorted every one.<sup>118</sup>

## **Eliminating missile fuel and nuclear weapons storage areas**

In 1998 Brown and Root bid on another CTR contract in Kazakhstan; one to provide program management for eliminating the large SS-18 missile fuel storage facilities at Zhangiz-Tobe and Derzhavinsk and the former nuclear storage depots at the two missile bases and Chagan air base. Requirements for this work grew out of a series of bilateral meetings in 1995-1996. There, Minister Shkolnik and Kazak officials raised the issue of permanent environmental problems if chemical and nuclear contaminants at these abandoned missile and bomber bases were not neutralized and demilitarized. They believed that neutralizing and destroying these facilities fell under the U.S.-Kazakhstan CTR framework agreement for strategic offensive arms elimination. When they submitted a formal request, U.S. CTR officials agreed. Since liquid missile fuels, specifically heptyl and amyl, were highly toxic, and contamination of the surface was possible, the two governments placed a premium on environmental safety. The initial phase began in April 1997 when Director Solomin and his colleagues at the Institute of Chemical Science worked with Almatypromstri JCS and American environmental firms to assess the contaminated sites and develop technical standards for monitoring the ground, air and radiation levels. In the second phase, which began in April 1999, the integrating contractors,

Brown and Root and ABB SUSA, subcontracted with and provided oversight of several Kazakh firms who carried out the actual work of neutralization, decontamination and demilitarization.<sup>119</sup>

At Zhangiz-Tobe and Derzhavinsk, Kazakh firms, working under supervision of the American integrating contractor, neutralized residual toxic heptyl and amyl liquid missile fuels, placing them into large containers, then transporting them to an isolated site for burning. The missile fuel storage facilities were then decontaminated and demilitarized, with any recoverable materials salvaged. They then demolished the remaining facilities. Three nuclear weapons storage areas underwent similar decontamination, deactivation and dismantlement in 1999-2000. John Booker worked with officials at the Kazakhstan Center for Defense Industries to identify, acquire and deliver heavy construction equipment, chemical and radiation monitoring devices, along with the usual training and services.<sup>120</sup>

Booker traveled to Kazakhstan frequently, reviewing the work at each site, certifying completion, and authorizing payment in dollars. Since the Kazakh firms worked on fixed-price contracts, the projects were subdivided into discrete phases so that work could be scheduled, performed and then if acceptable, be certified for prompt payment. This managerial concept was especially important to local firms who had to raise capital to purchase fuel, acquire trucks and other vehicles, and pay workers. Since all CTR programs in Kazakhstan, Russia, Ukraine and even Belarus were done through formal contracts, American program managers had to devise acquisition strategies based on U.S. policy objectives, federal contracting regulations and local conditions.<sup>121</sup>

Several hundred workers were involved in demilitarizing and dismantling these sites. At Derzhavinsk, for instance, the construction firm Almatypromstri JCS had 250 workers dismantling more than 150 buildings and structures, including nuclear storage bunkers built with reinforced concrete and covered with several meters of dirt. Following Kazakh and American procedures, they decontaminated the buildings and bunkers, salvaging any materials. Once they destroyed the buildings and facilities, the site was filled with dirt to the standard one-and-a-half meters and graded. When completed, Kazakh and American firms conducted environmental assessments, and the Kazakhstan State Commission made a final decision to accept the reclaimed

**With Courage and Persistence**

sites and return them to local authorities. Completion, certification, and transfer occurred for Chagan air base in October 1999, followed by Derzhavinsk missile base in August 2000, and Zhangiz-Tobe in September 2000.<sup>122</sup> Shortly after completion, Alexander N. Golev, Center for

Defense Industries, wrote: "It was not the project of the century in its scope or as an engineering feat. On the other hand, it is to some extent unique in that it marks the end of a series of projects that culminated in the elimination of strategic nuclear arms in our country."<sup>123</sup>

**Table 7-1. U.S. – Kazakhstan CTR Projects, 1994 -2000<sup>124</sup>**

<b>CTR Framework Agreement</b>	<b>DOD, MOD</b>	<b>December 1993</b>
<b>Phase I. – 1994-1997 – Projects Completed</b>		
Project Sapphire DOD, MOD, DOE * \$15-20 m. HEU -600kg purchased, removed, reprocessed in the United States		
Emergency Response Equipment DOD, MOD \$4.7 m. Protective clothes, Computer/Radio equipment, health kits, mobile labs		
Government to Government Communications Links DOD, MOD \$2.3 m. Continuous satellite communications, equipment, computers, training		
Export Controls DOD, MOD, MTI* \$7.2 m Computers, local area networks, lab equipment, coastal patrol boats, Radiation detection equipment, patrol vehicles		
Material Control & Accounting DOD, DOE, MOD \$22.4m Local area networks, computers, tamper devices, mass spectrometer, Physical protection systems, remote monitoring, installation, training		
Science & Technology Center DOD, DOS, MFA \$9.0 m.		
<b>Phase II - 1996 -2000 – Projects Completed</b>		
Nuclear Testing Tunnels DOD, MOD \$21.9 m Environmental survey, closed and sealed 181 nuclear testing tunnels, and closed and sealed 13 nuclear test holes		
SS-18 Silo Elimination DOD, MOD \$39.0 m Dismantled and eliminated 148 SS-18 silos, 16 launch control centers, salvaged materials, restored sites		
Strategic Bomber Elimination DOD, MOD \$2.3 m Dismantled, salvaged, eliminated seven Tu-95 heavy bombers		
Nuclear Weapons Storage Areas & SS-18 Fuel Facilities Eliminations DOD, MOD \$15.0 m Neutralized, decontaminated, demilitarized, and demolished two liquid fuel fill facilities and three nuclear weapons storage areas		

Acronyms: DOD - Department of Defense, MOD-Ministry of Defense, DOE-Department of Energy, MTI-Ministry of Industry and Trade, DOS-Department of State, MFA- Ministry of Foreign Affairs

Source: Report, CTR Policy Office, Office of the Secretary of Defense, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2002", (January 2001).

## Summary of CTR's programs, phases, and policies in Kazakhstan

The time span was only six years from 1994, when the two governments initiated the first major CTR project – Project Sapphire, until 2000 when they finished eliminating the SS-18 missile fuel facilities and nuclear weapons storage areas. During these years the United States, Kazakhstan, and to a degree, Russia moved far beyond declaratory policy statements to actually developing, implementing and completing cooperative military and scientific projects that assisted the new nation of Kazakhstan in its transition. A summary of activity during these years reveals two distinct phases in the CTR programs as seen in the following chart.

Without exception, senior leaders in Kazakhstan and the United States participated in initiating, approving and monitoring these international projects. Minister Shkolnik, the government's lead minister in the 1990s, explained that President Nazarbayev followed each project as it was defined, planned and carried out. He reviewed every program, Shkolnik explained, on an "extremely regular basis."<sup>125</sup> Secretary of Defense Perry was the Clinton Administration's leader in developing and leading the entire CTR program.<sup>126</sup> Perry had worked intensively with the Ukrainian government devising, shaping, expanding and pushing the bilateral cooperative program with Ukraine's President Kuchma, Defense Ministers Shmarov, General Kuzmuk and General Mikhtyuk. Now in Kazakhstan, Perry supported and followed the major projects in detail. Jim Reid explained that Harold Smith, Roland Lajoie and the CTR program office staff, "briefed him (Perry) monthly on the program, a full-blown briefing – all countries, all projects and all activities."<sup>127</sup> When they visited Washington, President Nazarbayev and Minister Shkolnik met with President Clinton and Secretary Perry. The agenda always included the cooperative projects, their status and future programs. In Washington, Kazakhstan's leaders met with Senators Nunn and Lugar and Congressional leaders. Nunn and Lugar traveled to Kazakhstan, going out to projects in the missile fields, meeting with Kazakh workers, and the president and senior ministers in the capitol. Perry traveled to the region frequently, going to Ukraine, Kazakhstan and Russia.<sup>128</sup>

In 1994 Vice President Gore and President Nazarbayev set up the U.S.-Kazakhstan Joint Commission, a senior bilateral



Kazakhstan President Nursultan Nazarbayev and U.S. President William J. Clinton in Washington, D.C.

organization established to develop cooperative programs and initiatives in an array of areas: nonproliferation, defense, trade, investment, foreign policy, science and technology, environmental protection, and energy.<sup>129</sup> Nazarbayev hosted the initial meeting in Almaty in November 1994, just days after U.S. Air Force cargo aircraft had flown the 600 kilos of highly enriched uranium out of Kazakhstan. The two leaders and the commission held subsequent annual sessions, alternating between Washington and Almaty in 1995, 1996 and 1997. At each session, Gore and Nazarbayev signed new CTR agreements, authorizing new projects and specifying new funding levels.<sup>130</sup> Throughout the multi-year effort in Kazakhstan, this commission was the senior policy group. One level below, Secretary Perry, Assistant Secretary Smith, Minister Shkolnik and Kazakhstan's Defense Ministers monitored and managed all aspects of the international programs and projects.<sup>131</sup>

At the operational level, the Defense Department's CTR Program Office and DTRA program managers carried out the day-to-day management and implementation. For the Republic of Kazakhstan, the Center for Defense Industries and the National Nuclear Center managed all programs and projects. At each of the three levels, the legal structures underlying every CTR program and project were the bilateral framework and implementing agreements, U.S. Congressional appropriations and laws, Kazakhstan's environmental and security laws and policies, and the administrative rules and legal rules governing the contracts contained within the U.S. federal acquisition regulations. Attributing the history of the U.S.-Kazakhstan's CTR program to charts listing millions spent and projects completed

ignores this complex decision making, managerial, and structural reality.

There were larger policy dimensions to U.S.-Kazakhstan relations. At its inception in 1994, the Gore-Nazarbayev commission established three senior working groups to carry out the organization's work between annual meetings. One group defined and developed new programs and recommendations for business development, especially in the area of energy. Another worked on initiatives for bilateral projects in environmental, scientific, and technology areas. A third working group sought to expand defense cooperation and develop new programs for defense conversion.<sup>132</sup> The original CTR legislation included funding for military-to-military defense cooperation, which meant initiating new military-to-military contacts. However, it did not include funding for defense conversion programs, which would allow and encourage U.S. corporations and firms to develop joint ventures with former military-industrial enterprises in the new states. Testifying before Congress, Secretary Perry championed defense conversion, encouraging Senators Nunn, Lugar and Domenici to include it in the CTR authorization for 1993 and 1994. Congress agreed, authorizing CTR legislation funding military-to-military contacts and exercises and defense conversion, the latter in two programs: Industrial Partnering Program and Defense Enterprise Fund. These two programs had an interesting history in Kazakhstan.<sup>133</sup>

### Defense Conversion and Defense Enterprise Fund projects in Kazakhstan

When Secretary Perry flew into Almaty in March 1994, the U.S.-Kazakhstan CTR effort was in its infancy. Perry had come from the missile base at Pervomaysk, Ukraine and he would fly next to Moscow for meetings with General Gravchev, Russian Minister of Defense. In Kazakhstan, Perry signed a CTR implementing agreement, "concerning the conversion of military technologies and capabilities into civilian activities."<sup>134</sup> This agreement, plus the October 1993 Kazakh "Defense Conversion Law" set the legal foundation for the bilateral defense conversion program.<sup>135</sup> Secretary Perry was the driving force; he believed that converting former military production enterprises into firms that could produce and market consumer products would be beneficial to the new nation's economy and its people. Perry's vision

for facilitating conversion of former state-centered defense industries to a market-oriented economy encompassed the entire region; he had launched similar programs in Belarus, Russia and Ukraine. Perry told CTR managers to "find" former defense enterprises and "facilitate" their linkage to American companies willing to invest, manage and market new products, and then "finance" the initial effort.<sup>136</sup>

In Washington, the CTR Program Office obligated \$17.2 million for establishing industrial partnerships with former defense firms in Kazakhstan.<sup>137</sup> President Nazarbayev's government declared it would commit \$15 million, mostly in "in-kind" contributions, such as laboratory facilities, existing equipment and production factories.<sup>138</sup> The two governments set up a bilateral defense conversion committee in 1994 to evaluate former defense enterprises in Kazakhstan willing to form joint ventures. Paul Boren, an experienced CTR manager, flew to Almaty in the fall of 1994, met with the defense conversion committee, and invited dozens of defense managers identified by the government to come to Washington for meetings with American corporations and companies interested in investing.<sup>139</sup> Throughout the year, Secretary Perry sought out U.S. business executives, explaining investment opportunities and encouraging them to participate in the defense conversion program in the newly independent nations. In June 1994, President Clinton had appointed Randolph Reynolds, Vice Chairman of Reynolds Metals Corporation, as chairman of the fund.<sup>140</sup> By February-March 1995 there was sufficient investment and business interest, followed by financial, production and marketing analyses, that commitments to four joint ventures could be formed in Kazakhstan. In short order, the Defense Department's committee obligated initial defense conversion funds to the following U.S.-Kazakhstan joint venture firms.<sup>141</sup>

#### **ByelKamit Scientific Incorporated - Gidromash and Belomo**

Conversion of a former surface-to-air missile plant to a manufacturing facility for producing cryogenic tanks and valves for use in chemical and oil industries.

#### **Nursat and AT&T – KazInform Telecom**

Conversion of a former military missile tracking and satellite communications facility into an international telecommunications downlink station.

#### **KK Interconnect – KRAS and National Nuclear Center**

Conversion of a former military electronics facility into a plant to produce and market single and double layer printed circuit boards for regional and international markets

#### **Biomedparat and Allen and Associates**

Conversion of a former biological weapons production plant into a facility for manufacturing, packaging, and marketing vitamins, pharmaceuticals, and antibiotics.

For a variety of reasons, once established, all of these joint ventures struggled; indeed most failed within a few years. Why? In some cases, the U.S. investment in time, money and equipment was not sufficient to sustain manufacturing lines for more than a few months. In other cases, international competition, especially from Asian electronic firms, swamped the new ventures. In still other cases, the converted manufacturing plants were located in areas so remote from any distribution or marketing centers, that the cost of transporting goods and services was exorbitant. There was also a clash of managerial styles, business cultures and approaches to investing and profits.<sup>142</sup> Only one firm, ByelKamit Scientific was an unqualified success. Focusing its products on Kazakhstan's rapidly developing national oil and gas industries, the firm manufactured cryogenic tanks for gas storage, cryogenic valves, safety valves and tanks for nuclear waste storage and transportation. The firm's products received certification from American committees monitoring technical standards. Later they met international standards. Why was this joint venture successful while the others failed? Paul Boren attributed it to the American-Italian managers' business strategy of first getting certified by international and American technical boards, and then thinking through the direction of Kazakhstan's economy and what its needs would be in the late 1990s and beyond.<sup>143</sup>

The second part of Congress' defense conversion initiative in 1993-1994 was the Defense Enterprise Fund. Secretary Perry testified in support, citing the experience of other U.S. government enterprise funds set up and operated by the U.S. Agency for International Development.<sup>144</sup> Following Congressional authorization in the FY1993 CTR Act, the Defense Department established a private, non-

profit corporation that would provide financial assistance to the new independent states for conversion of their firms and enterprises in the defense sector to commercial businesses. Randolph Reynolds was chairman of the fund.<sup>145</sup> Congress added additional funds in FY1995 CTR bill, bringing the Defense Department's contribution to \$51.7 million. Congress also authorized the State Department to shift \$15 million from the Freedom Support Act to the fund. Consequently by 1995 the Defense Enterprise Fund was fully funded at \$66.7 million.<sup>146</sup> Throughout the 1990s Congress did not appropriate any additional funds. Between 1994 and 2000, the fund's corporate management invested in 16 joint ventures in Russia, Ukraine and Kazakhstan. Across the former Soviet Union, there were an estimated 2,000-4,000 defense enterprises, research and development facilities, and industrial complexes. Measured against the scale of total firms to those actually assisted, the U.S. effort was infinitesimal. Measured against a scale of business success, the fund failed as well. 60 percent of the joint ventures failed, due to many causes, but primarily to the collapse of the Russian ruble system in 1998. By 2000, only six joint ventures remained active.<sup>147</sup>

Two firms were in Kazakhstan. Nursat was a commercial satellite communications provider for businesses, government and the public. The firm began in 1995 as a joint venture between AT&T and Kazinformtelekom of Almaty. When AT&T pulled out, the government financed the firm, which built satellite telecommunications stations in Astana, Almaty, Aktubinsk, Shymkent, Taraz, Karaganda, Pavlodar, Aktau, Uralsk and other smaller administrative centers.<sup>148</sup> The Defense Enterprise Fund invested \$3 million in the company, which provided conduits into and out of Kazakhstan for the internet, infotel, and commercial data networks.<sup>149</sup> The company provided digital uplinks for data channels, international satellite telephone and facsimile networks, long-distance corporate telephone networks, video-conferencing and television. The other successful firm was KK Interconnect. Formerly a small electronics laboratory located at the Semipalatinsk Test Site, this joint venture began under the defense conversion program. When it failed, the National Nuclear Center continued its support, and with a \$3 million investment from the Defense Enterprise Fund, the firm gained a foothold and had success in manufacturing electronic circuit boards, personal computers and computer components.<sup>150</sup> By 2000 both of these firms made the transition from former

defense enterprises to commercial businesses in the modern global economy.

## Extending and expanding CTR programs with Kazakhstan

Kazakhstan was a vast country and during the Soviet era numerous missile, space, and military aircraft test ranges were located on its territory. During the 1990s the Russian General Staff withdrew its forces and technical instrumentation from these test sites and ranges. However, it retained an interest in using the test ranges. Following several years of diplomatic and military negotiations, in 2000 Kazakhstan's parliament ratified a series of bilateral agreements that leased four military test ranges to the Russian Federation: Sary-Shagan Range, Emba Test Range, 929<sup>th</sup> Flight Test Center and Kapustin Yar Missile Test Range. Russia agreed to pay Kazakhstan \$27.5 million a year for 10 years, with \$24 million provided as in-kind payments in the form of flight training for Kazakh pilots and maintenance warrant officers, and fuel and supplies.<sup>151</sup> Russia already had leased use of the large Baykonur cosmodrome from Kazakhstan as a launch site for its military, space, and commercial missiles. Through a bilateral treaty in 1994 Russia acquired the right to use the space center, its headquarters city, Leninsk and all facilities for 25 years for an annual payment of \$115 million. The complex was quite large. Leninsk had a population of 150,000 of which 60,000 were Russian citizens. The Russian Strategic Rocket Forces' research and development operations, along with 7,000 military officers, were based at Baykonur.<sup>152</sup> Despite its financial difficulties, the Russian government relied on the Baykonur cosmodrome for most of its military and space flights in the 1990s. During these years there was constant tension between the two governments over annual payments, social conditions, taxes and customs services. Against this background, the United States and Kazakhstan negotiated terms for extending and expanding the CTR program.

Every program and project in Kazakhstan fell under the basic CTR framework agreement, signed by Nazarbayev and Gore in 1993. That fundamental agreement expired in December 2000. Since it exempted government officials, companies and individuals of both nations who were working on joint CTR programs and projects from customs duties, taxes and legal suits, any new bilateral agreement had to be signed by government leaders and ratified by both

houses of Kazakhstan's parliament. When Shkolnik, now Minister of Energy and Natural Resources, signed a new framework agreement that December, he nominated several new projects to the United States government. Kazakhstan's parliament balked and did not ratify the signed framework agreement. Consequently, Kazakhstan's Foreign Minister Erlan Idrissov and U.S. Ambassador Stephen Sestanovich signed another agreement in December 2000 temporarily extending the framework agreement to 2007, allowing all current CTR projects to proceed.<sup>153</sup> During the following months, when Kazakhstan's government and parliament debated and developed formal interpretations on the agreement, they agreed on conditions for the government notifying parliament of new projects, and on new reporting requirements for the government informing the parliament on completed projects. On July 3, 2002, President Nazarbayev signed a bill extending the U.S. Kazakhstan CTR framework agreement to 2007. During the debate, American Ambassador Larry C. Napper announced in February 2002 that the U.S. Defense Department would obligate \$6 million to support elimination of six missile silos at the Leninsk Missile Test Site.<sup>154</sup> Other CTR projects recommended by Kazakh officials were conversion of facilities and infrastructure at Semipalatinsk, burial of spent fuel, dismantlement of selected equipment at the Pavlodar Chemical Facility, and continued dismantlement of the former biological weapons production facility at Stepnogorsk.

## The Stepnogorsk Biological Weapons Complex project

This project had an interesting history. The Stepnogorsk Scientific Experimental and Production Base was one of six biological warfare (BW) production complexes developed by the Soviet Union's national organization, Biopreparat. Established in 1973, Biopreparat consisted of more than 30,000 scientists, engineers and technicians working in 40 research and development institutes, laboratories and production plants.<sup>155</sup> The Stepnogorsk BW production complex was among the most modern of the USSR facilities, constructed and equipped in the mid-1980s. Commander Dr. Kanatjan Alibekov (Kenneth Alibek) served as military commander of the Stepnogorsk production complex from 1983 to 1987. Subsequently, Alibek rose to be the chief scientist and first deputy director of Biopreparat before

he emigrated to the west in the early 1990s. "The Soviet Union had the most efficient, sophisticated and powerful offensive BW program in the world," Alibek wrote.<sup>156</sup> Deadly biological agents and toxins – anthrax, tularemia, plague, smallpox, Marburg virus and glanders were produced in large quantities and placed into weapons, like airborne spray tanks, cluster bombs or missile warheads. The Soviet military envisioned using biological weapons in tactical and strategic missions. "A strategic attack," Alibek explained, "against a densely populated city using 50 kilograms of anthrax spores, which have a mortality rate of 90 percent, could result in about 100,000 fatalities."<sup>157</sup>

In Kazakhstan, the Stepnogorsk biological weapons complex was modern and quite large, with 25 buildings spread out over two square kilometers. One section had the capacity for cultivating deadly strains of anthrax and then producing it in massive quantities in 10 large fermenters. The toxins were separated in the fermenters and, in wartime could be placed into cluster bombs or missile warheads. One expert estimated that if the plant was fully mobilized,

it could produce 300 metric tons of anthrax in a 10-month period.<sup>158</sup> Full-scale BW production never occurred; instead in the late 1980s the Soviet government cut funding and then stopped it altogether. Dr. Alibek, then Biopreparat's first deputy director, said that in 1989 he "ordered the full decontamination of the Stepnogorsk facility, using a mixture of formaldehyde and potassium permanganate... yet even after we had finished, it was possible to isolate viable anthrax spores from deep inside the walls and floors."<sup>159</sup> When the Soviet Union collapsed, Kazakhstan inherited the secret Stepnogorsk Scientific Experimental and Production Base complex. Initially, Kazakh officials saw the possibility of a modern, decontaminated biological production facility, one that with adequate investment and equipment could be developed into a plant to make biotechnologies, such as animal vaccines, human vitamins or medical instruments. In Stepnogorsk, the former complex and adjacent petrochemical plant contained a production area of 500,000 square meters.

For three years, 1992-95, Nazarbayev's ministers tried to convert portions of the former BW production facility



Stepnogorsk BW Production Complex, Kazakhstan

Department of Defense



Defense Threat Reduction Agency

Fermentors inside the Stepnogorsk BW Production Complex

into a commercial biotechnical enterprise. In 1993-1994, the government reorganized the complex into a joint stock company, AO Biomedpreparat. They purchased new equipment and set up a production line to produce genetically engineered insulin and other pharmaceutical products. Within a matter of months, however, the effort failed.<sup>160</sup> Next, the government nominated the Stepnogorsk company to be a part of the U.S. defense conversion program being championed by Secretary of Defense Perry. That initiative worked, as AO Biomedpreparat and Allen & Associates, International agreed to form a joint business venture to produce and commercially market vitamins, antibiotics and other pharmaceuticals produced in a part of the Stepnogorsk complex. In early 1995, Harry Cook, CTR program manager worked with the new firm as it received \$2.8 million in Department of Defense investment funds, and \$3 million, largely in-kind contributions, from the Kazakhstan government. Cook did not travel to the plant. For a variety of business reasons, this joint enterprise failed in less than a year. When the Kazakhstan government halted

its contributions in late 1995, Biomedpreparat managers stopped production, cut off the power, mothballed the equipment and released the workers.<sup>161</sup>

During the spring of 1995 Andrew Weber, from the U.S. Embassy, received permission from the Kazakh government to travel to Stepnogorsk to see if there was a former biological weapons production facility there. Weber and a small U.S.-Kazakhstan team flew into the city in early June where they were met on the runway by the plant director Gennady Lepyoshkin, a former Soviet colonel. "You're not welcome in our city," Lepyoshkin told Weber. "Leave!"<sup>162</sup> Weber persuaded him to let them stay overnight in the town, where he could communicate with U.S. Ambassador Courtney. The colonel agreed. Weber realized the Russian director and the staff regarded the plant as a Russian installation, one not controlled or owned by Kazakhstan. Within a few hours Ambassador Courtney had secured a faxed letter from Minister Shkolnik, urging Colonel Lepyoshkin to open the plant to Weber and the American team. The next day, Weber presented the minister's letter and the team was allowed into the plant, where they met with the director and his staff. Director Lepyoshkin presented a briefing on the plant's work: the manufacture of vaccines. Then, Weber spoke in Russian, explaining that he believed the plant had been designed for production of biological weapons, specifically anthrax. Over vocal objections of his staff, Lepyoshkin declared, "Let's end this discussion. We'll show you everything, and you can make your own judgments."<sup>163</sup>

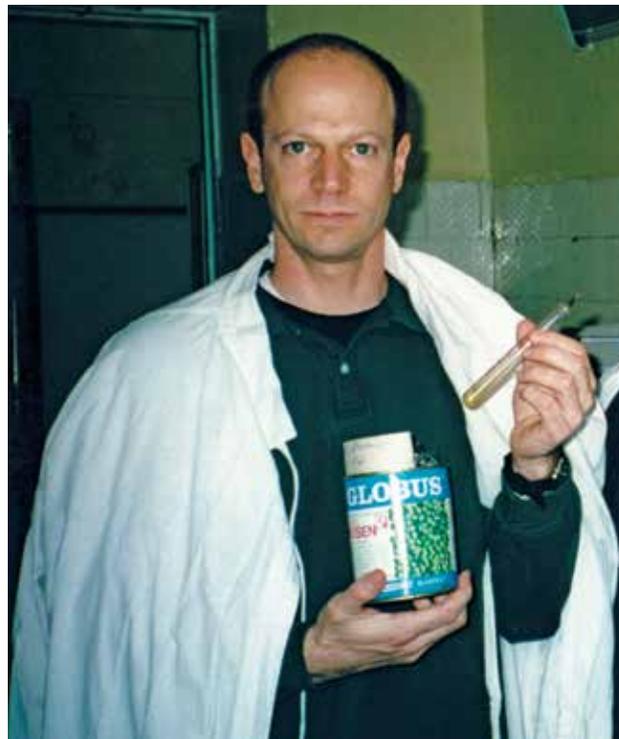
The next day, Weber's team toured the site, inspecting the building, bunkers and laboratories. Weber knew the plant's functions and details from discussions with its former director, Alibek, who had supervised construction and managed the plant in the late 1980s. Inside the buildings, equipment had been mothballed, but it was well preserved. When they went into the main production facility, Building 221, they discovered it was a high-level containment facility for making dangerous pathogens. In a three day production cycle, the facility was capable of producing 1.5 tons of bacteria. The building contained ten huge four-story tall fermenters, which were used in the production of anthrax for biological weapons. Weber remembered that when he saw these massive fermenters, it was one of the most disturbing days of his life. "This is a plant that could produce and load onto weapons – targeted at the United States – 300 metric tons of anthrax during a wartime mobilization period." When

he climbed to the top of one of the 20,000-liter fermenters and looked down into the chamber with a flashlight, he felt a chill run up his spine. "I think that more than any other day in my life," he said later, "this was my introduction to two things. First, on biological weapons. I had read about them. I had taken courses. But this was the real thing. And second to the Soviet Union ... there it was, I was face to face with evil."<sup>164</sup>

Six months later on a cold winter day retired General Roland Lajoie, director of the CTR program office, saw the Stepnogorsk complex for the first time. As the United States' chief arms control inspector, he had traveled extensively across the Soviet Union and throughout the region of newly independent states. He had seen massive destructive missiles, bombers, submarines and all manner of other weapons. Years later he recalled his impressions at Stepnogorsk:

"It was one of the scariest complexes I've ever seen in my military career. It was a huge complex, nestled right next to a larger petro-chemical operation, so that its signature from overhead would have been obscured. It was designed to produce a massive, obscene, amount of anthrax. It would be weaponized, put into warheads that would be stored in refrigerated bunkers and then readied to be sent by rail to the missile sites. It was just the scariest thing. It started with the large fermenters on the top floor (6-stories), and a gravity-fed production line to produce, refine, dry, grind and finally fill the anthrax into the warheads. Weaponization is the most damning, but rarely seen, step in BW production. It was right there on the premises."<sup>165</sup>

Lajoie recognized, on the spot, that the plant had been abandoned. Water pipes were frozen, the huge fermenters were left standing on the plant floor, and the floor was littered with materials. There was little security. When he returned to Washington, the general recommended to Secretary Perry that the Stepnagorsk BW complex be dismantled and destroyed completely. Two months later, Dr. Carter met with Minister Shkolnik in Almaty and he proposed that a joint study be undertaken to evaluate the former BW production plant and based on that analysis, a project be developed to dismantle and destroy the plant. Shkolnik,



Andrew Weber with biological sample, Stepnogorsk

after consulting with the president, agreed, provided the United States would agree to convert other buildings on the complex site to other purposes and encourage foreign investment. In subsequent months American and Kazakh technical experts and program managers fashioned a two-stage, multi-year CTR-funded program using weapons of mass destruction infrastructure elimination funds to dismantle the main and auxiliary military microbiological equipment at the Stepnogorsk complex.<sup>166</sup>

Once the bilateral policy was set, actual work progressed as planned. Specialists drawn from both nations inventoried the complex's systems and equipment, sampled the facilities for the presence of toxins, and developed requirements for a new modern biochemical laboratory to monitor worker safety during plant dismantlement. Initiated in December 1996, the first phase was completed with installation of a new \$750,000 laboratory in Stepnogorsk in April 1998. This phase included engineering and analytical reports that determined the sequence and level for eliminating the biological weapons plant's infrastructure.<sup>167</sup> In September AO Biomedpreparat, the local Kazakh firm, received a contract to begin dismantling the first of nine buildings at the former BW production complex. Construction also

began on the small scale hospital, one designed to detect, monitor and protect workers from any infectious diseases. Throughout the project, all 119 AO Biomedpreparat workers received daily medical exams prior to and after dismantling operations. Every Kazakh worker received special protective uniforms and individual monitoring equipment. Scientists at Kazakhstan's National Sanitary and Epidemiological Service supervised every phase of the work. This government institute documented removal and destruction of every item of equipment and the buildings.

Over the next 14 months, Biomedpreparat's workers dismantled the BW equipment and systems in all of the buildings, including the pipes, air filters, couplings, compressors, fermenters, separators, valves, sewage drainage systems, electrical systems, shower rooms, offices, doors and walls. Next, they began dismantling the six-story BW production building's foundation and removing waste materials. By December 2000, the BW production plant at Stepnogorsk had been destroyed.<sup>168</sup> Another small CTR contract funded dismantling, decontamination, and removal of the plant's ancillary equipment. By April 2003 this work had been completed. By that time, a major new CTR Biological Weapons Proliferation Prevention Program was underway in Kazakhstan.<sup>169</sup>

## New CTR Biological Threat Reduction programs in Kazakhstan

Congress declared in the 2000 and 2001 CTR legislation that "the biological and chemical weapons remaining in the former Soviet Union pose a significant threat to U.S. national security."<sup>170</sup> Following the sudden, devastating



Workers destroying Stepnogorsk BW Production Complex

terrorist attacks on New York and Washington on September 11, 2001, the Bush administration redefined the nation's strategy on countering weapons of mass destruction (WMD), their use and further proliferation. As the administration prepared to go to war against Iraq, President Bush issued the National Strategy to Combat Weapons of Mass Destruction in December 2002.<sup>171</sup> Biological weapons were mass casualty weapons, consequently many intelligence and international security experts assumed that dangerous states and terrorist groups would seek out, acquire, and use these deadly weapons.<sup>172</sup> Andrew Weber had joined the Defense Department's CTR program office and as they analyzed the sources of deadly toxins, bacteria and viral strains, attention focused on the vast Soviet Biopreparat network of labs, research institutes, development centers and production facilities. By this time, most of these institutes and centers had fallen into disrepair and insolvency. However, they possessed two critical elements: unique biological collections of bacteria, fungi and viral strains, and a cadre of trained, experienced biologists, scientists and technicians.<sup>173</sup>

In Washington, Senator Richard Lugar and his staff fashioned legislation to address the need for biosecurity and biosafety programs at the former BW facilities and institutes. In 2002, the Bush Administration's National Security Council staff reviewed all CTR and related programs in the non-Russian former Soviet Union (FSU) nations. Biological weapons prevention programs received strong support. Key Congressional committees directed the Defense Department to develop broad new comprehensive programs to assist FSU nations in detecting, assaying and responding to either BW smuggling, attack or more likely the outbreak of deadly new strains of diseases and viruses. At the same time, Congress continued its interest in developing joint projects to dismantle and destroy the new nations' inherited biological weapons production facilities.<sup>174</sup>

Preventing biological weapons transfer from any of the new states to a hostile state or terrorist group became a major U.S. CTR objective as the Defense Department developed new bilateral implementing agreements and a new comprehensive program. Known as the Biological Weapons Proliferation Prevention (BWPP), the new program had four parts. In one element there was a series of new CTR projects designed to enhance biosecurity and biosafety of dangerous pathogens located at government biological research, development and production centers.

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Since this would be a multi-nation, multi-site and multi-year effort, the CTR program office projected a funding requirement of \$63 million, from 2001 through 2006. The second element consisted of new bilateral projects to engage the region's biochemists and scientists in collaborative research projects with American scientists working in universities, institutes and even companies. They estimated that these collaborative research projects would cost up to \$76.2 million over the five years. One major objective for all collaborative biological research projects was to establish transparency. In 2001, the CTR Program Office told key Congressional committees that it would initiate approximately 11 new collaborative research projects a year for the next five years. The third element sought to develop joint projects that would assist nations in consolidating the infrastructure and equipment associated with former BW research, development, testing and production facilities, and then to assist new governments in dismantling and destroying BW production facilities. They projected the cost for CTR projects in this area would be \$53 million.<sup>175</sup>

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## TADR Program

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The fourth and most comprehensive part of the Defense Department's Biological Weapons Proliferation Prevention Program was the Threat Agent Detection and Response (TADR) program. The concept and development of this new program emerged in 2002-2003. Its principal objective was to strengthen the new government's existing networks and systems for detecting and responding to the diversion or release of dangerous pathogens. A second objective was to assist the region's governments in removing pathogen collections from Soviet-era remote, sentinel stations and transporting them, safely and securely, to a national centralized laboratory. The program also sought to integrate BW-related scientific expertise in the region with the international scientific community. Finally this new program, if accepted by the national governments, would encourage consolidating dangerous pathogens into a secure new central reference laboratory to reduce the risk of theft, diversion, accidental release, or terrorist attack. Included in every new TADR project were provisions for initial and recurring training for the scientists, technicians and support personnel on biosecurity, biosafety, bioethics, proliferation

prevention, diagnostics, epidemiology, and quality control and assurance. In 2004 the CTR Program Office and the Defense Threat Reduction Agency estimated the cost of all these new TADR projects from 2005 through 2010 would be \$586.1 million.<sup>176</sup>

In Kazakhstan the Biological Weapons Proliferation Prevention effort resulted in several projects. Unlike Russia, Kazakhstan demonstrated "an extraordinary degree of openness and transparency" about the institutes, centers and people who had participated in the Soviet BW programs.<sup>177</sup> President Nazarbayev's government engaged both the United States and the European Union as well, in new cooperative biological weapons prevention programs. One of the first U.S.-Kazakhstan CTR projects was carried out at the Scientific Research Agricultural Institute, the new nation's only institution concentrating on veterinary virology. Located in Otar, approximately 180 kilometers from Almaty, the institute had a modern laboratory capable of carrying out research in molecular biology and genetic engineering. Before 1991, it was part of the USSR's Biopreparat complex, and its 400 scientists and technicians researched new anti-crop and animal biological toxins. According to Kazakhstan sources, scientists at the agricultural research institute studied dangerous and lesser-known infectious animal and crop diseases and developed techniques for producing vaccines against hog cholera, fowl plague, avian infectious laryngotracheitis and fowl pox. In the 1990s the institute turned its attention to developing new methods for diagnosing animal and bird infectious diseases.<sup>178</sup>

Professor Saidigapbar Mamadaliyev, director of the Scientific Research Agricultural Institute, recommended that the Kazakhstan government consider security and safety enhancements to the institute's strain museum as a possible joint project with the U.S. CTR Biological Weapons Proliferation Prevention program. Following an initial survey of the museum by CTR program managers, the Defense Department agreed and the initial project was launched at the Scientific Research Agricultural Institute in April 2000. Over the next three years, the agricultural institute's scientists inventoried the museum and the institute's strains, developed requirements for new security systems with zones of protection for the dangerous strains, installed security equipment and systems, and conducted training for personnel. New perimeter fences, improved lighting, perimeter alarms and training for guards followed

physical renovations to the museum facility. In addition, the institute's senior staff worked with Bechtel International, the firm that had been selected as the BW proliferation prevention program's integrating contractor for all the new states. Jointly, the two groups discussed, negotiated and developed a business plan that assessed the institute's scientific and technical capabilities and projected where it would fit into the region's economy. As this effort was underway, several of the Kazakh institute scientists worked on collaborative research projects under the CTR-funded International Science and Technical Center in Almaty.<sup>179</sup>



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Kazakhstan President Nazarbayev presents award to Senator Lugar, Kazakstan, 2006

Another major biological weapons prevention project developed with the Kazakhstan's Scientific Center for Quarantine and Zoonotic Disease. Located in central laboratory Almaty and regional field stations, during the Cold War, this important center created and managed an extensive field-based anti-plague system for Central Asia. In the Soviet era, 450 scientists and technicians at the Almaty institute operated a network of 19 epidemiological monitoring stations located in the "stans" and southern Russia. The institute had four laboratories and a vaccine plant capable of producing more than 20 million vaccines annually. Like all the Biopreparat institutes, it was also linked in various ways with the science, testing and production of biological weapons. In 1992, Moscow terminated all funding and military related research ended. During the 1990s the center underwent contractual and financial hardship. It managed, however, to gain scientific recognition from the World Health Organization as one of four certified centers to

detect and classify plague strains in the Central Asian region. Isolated cases of human plague occurred in Kazakhstan every year. The center's scientists worked on collaborative projects with European Union scientists and American biologists and university scientists under a series of ISTC projects.<sup>180</sup>

Then in 2000, the center received a CTR contract to initiate a three-year project to make major improvements in the physical security and biosafety at the central reference laboratory in Almaty. To improve visibility, local workers removed 1,360 bushes, 340 trees and numerous obsolete, abandoned buildings. Around the perimeter, they constructed a new concrete panel fence with razor wire, a new lighting system with search lights, guard houses and a communication system. In the anti-plague center's main building, they improved the physical security of the institute's culture collection, which included more than 2,000 strains of pathogens. New doors, locks, window grids, electrical alarm systems and computers with Internet access elevated the biosecurity system to world standards. An American firm, Cuhza, carried out the engineering assessment for a new central reference laboratory. That project signaled a major shift in direction for both the Almaty anti-plague center and the U.S. CTR biological proliferation prevention program.<sup>181</sup>

By 2000 Kazakhstan's anti-plague center in Almaty had reoriented its mission. It established, staffed and maintained 10 regional stations and 17 field stations capable of monitoring the outbreak of plague in towns, villages and nomadic herdsman living on the nation's vast steppe (1,007,350 sq. km.). Under the Threat Agent Detection and Response program, American CTR officials were prepared to assist Kazakhstan in consolidating and modernizing its anti-plague system with new laboratory equipment, computers and communication equipment in the remote field stations. First, the two governments negotiated and signed a new CTR implementing agreement covering the legal status for the new cooperative biological research program. In December 2004, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, and Minister Shkolnik, Energy and Mineral Resources, signed an extension of the CTR weapons of mass destruction implementing agreement that expanded cooperation against the threat of bioterrorism in Kazakhstan.<sup>182</sup> In essence, this agreement authorized development of a range of new cooperative biosecurity and biosafety facility projects, all funded by the CTR program.

In the United States, concerns about biological weapons continued in the Bush Administration and Congress. In April 2004, the president issued a National Security Directive on Biodefense for the 21<sup>st</sup> Century, and Congress continued to fund expansion of the CTR Biological Weapons Proliferation Prevention program. During 2004-05, four other laboratories and medical centers in Kazakhstan joined the CTR Threat Agent Detection and Response program. They were the Central Sanitary and Epidemiological Service Laboratory in Almaty, the Ministry of Defense Medical Department in Almaty, and the Central Veterinary Laboratory in Astana, the Scientific Research Agricultural Institute (SRAI) in Otar, and their associated regional field stations. At each of these labs and institutes Kazakh scientists and American biological experts and project managers developed requirements for new projects that would modernize diagnostic capabilities to minimize the need for retaining dangerous pathogen strains in the remote field stations, improve the labs microbiology forensic capability, promote transparency in diagnosing and researching pathogens and develop a network of trained scientists to prevent, detect and contain a biological weapons terrorist attack. Biosecurity and biosafety projects were incorporated as part and parcel of the requirements for each institution. From Kazakhstan's perspective perhaps the most important aspect of the entire Threat Agent Detection and Response program was the prospect for funding the construction and equipping of the new U.S.-financed central reference laboratory.<sup>183</sup>

In many ways, Kazakhstan became one of the leading nations in cooperating with the United States in this new comprehensive threat agent detection and response program. By 2005, similar cooperative projects were defined and being implemented in Georgia and Uzbekistan. The United States obligated \$122.9 million to the program in these three nations. In 2005-2006, negotiations with Ukraine and Azerbaijan resulted in new CTR biological proliferation prevention implementing agreements and new bilateral cooperative programs. The model or template for these new bilateral BW proliferation efforts was the work done in Georgia, Uzbekistan and above all, Kazakhstan.<sup>184</sup>

When Senator Lugar traveled to Kazakhstan in late summer 2006, he met with President Nazarbayev and senior ministers who explained they were prepared to expand the bilateral biological weapons nonproliferation program by creating a disease surveillance system.<sup>185</sup> In addition to the

biosecurity and biosafety measures mentioned above, and plans for a new central reference lab, government ministers wanted to expand their international scientific research efforts with American, European, and Central Asian scientists and scientific institutes. The Kazakh government's willingness to push into the international arena was symptomatic of its 15-year transition from a nuclear to a nonproliferation state. In 1991, the proliferation issues stressed by the great powers concerned the future of Kazakhstan and its inherited nuclear weapons. Now 15 years later, proliferation issues, articulated by the United States and European Union nations, focused on locating and identifying dangerous new biological strains, new infectious diseases and the threat of theft by terrorist groups. In those 15 years, Kazakhstan, a small but important Central Asian nation made the transition from inherited weakness to regional strength.

"We believe," Nazarbayev wrote in 2006, "the steps we took in the past decade became yet another considerable contribution to preserving stability and security in the world. The people of Kazakhstan stand by our historic non-nuclear weapons choice and call upon other countries to follow us."<sup>186</sup>

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<sup>8</sup> S. Akiner, "Soviet Military Legacy in Kazakhstan," *Jane's Military Intelligence Review*, 554.

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<sup>11</sup> *Ibid.* pp204-205.

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<sup>14</sup> Mikhail Alexander, *Uneasy Alliance*, pp 208-209.

<sup>15</sup> James A. Baker III, *The Politics of Diplomacy, Revolution, War and Peace, 1989-1992*, pp 514-545.

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<sup>18</sup> Elaine Sciolino, "Kazak Uses America to Enhance His Stature," *New York Times*, October 25, 1993.

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<sup>20</sup> Nursultan Nazarbayev, *Epicenter of Peace*, (Hollis, New Hampshire, 2001), p50.

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<sup>23</sup> See Agreement Between the United States of America and the Republic of Kazakhstan Concerning the Destruction of Silo Launchers of Intercontinental Ballistic Missiles, Emergency Response, and the Prevention of Proliferation of Nuclear Weapons, dated December 13, 1993. There were five CTR agreement signed that same day.

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<sup>25</sup> See Agreement Between the United States of America and the Republic of Kazakhstan Concerning the Destruction of Silo Launchers of Intercontinental Ballistic Missiles, Emergency Response, and the Prevention of Proliferation of Nuclear Weapons, dated December 13, 1993. There five agreements signed that day. The USSR's nuclear, chemical, and biological weapons arsenals were so vast that U.S. CTR policy and program managers sought to limit their bilateral objectives.

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<sup>29</sup> Potter, *Dismantling the Cold War*, pp. 350-351.

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<sup>37</sup> William J. Clinton, "The President's News Conference with President Nursultan Nazarbayev, February 14, 1994, <http://www.presidency.ucsb.edu>

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<sup>40</sup> Nursultan Nazarbayev, *Epicenter of Peace*, p 61.

<sup>41</sup> Mikhail Alexander, *Uneasy Alliance*, 201-211.

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<sup>43</sup> *Nuclear Threat Initiative, Country Overviews*, "Kazakhstan Nuclear Facilities, Semipalatinsk Test Site," see article "Destruction of "Nuclear Device" in Tunnel 108 in Semipalatinsk," 31 May, 1995, in [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles)

<sup>44</sup> Nursultan Nazarbayev, *Kazakhstan's Nuclear Disarmament, a Global Model for a Safer World*, (Washington, D.C., 2006), Professor Shkolnik's biographical data on pp 32-33.

<sup>45</sup> Interview, Professor Vladimir S. Shkolnik, Minister of Energy and Mineral Resources, Republic of Kazakhstan, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., December 15, 2003.

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<sup>84</sup> Interview with Viktor A. Pabst, Alexander N. Golev, and Karshaubay Sh. Khusainov, Center for Defense Industries, Republic of Kazakhstan, Almaty, Kazakhstan, March 7, 2001. All interviews conducted by author.

<sup>85</sup> *Radio Free Liberty/Radio Liberty News Briefs*, "Agreement on Nukes in Kazakhstan," 9-13 May 1994.

<sup>86</sup> *Moscow News*, "Weapons," May 6-12, 1994.

<sup>87</sup> *Nuclear Threat Initiative, Kazakhstan*, "Missile Overview", [www.nti.org/e\\_research/profiles/Kazakhstan/Missile](http://www.nti.org/e_research/profiles/Kazakhstan/Missile)

<sup>88</sup> ITAR-TASS, "Kazakhstan Completes Transfer of Nuclear Warheads," 25 April 1995. in FBIS-SOV-95-080.

<sup>89</sup> *Nuclear Threat Initiative, Kazakhstan Profile*, "August 1996 Final Protocol on Withdrawal of SRF from Kazakhstan Signed," [www.nti.org/e\\_research/profiles/Kazakhstan/Missile](http://www.nti.org/e_research/profiles/Kazakhstan/Missile)

<sup>90</sup> Ibid.

<sup>91</sup> *Nuclear Threat Initiative, Kazakhstan Profile*, "October 1996: Missile Silos are Scheduled to be Closed Down," [www.nti.org/e\\_research/profiles/Kazakhstan/Missile](http://www.nti.org/e_research/profiles/Kazakhstan/Missile)

<sup>92</sup> K.K. Tokayev and V.S. Shkolnik, editors, *CTR in Kazakhstan*, 37.

<sup>93</sup> *Nuclear Threat Initiative, Kazakhstan Profile, Missile Overview*, "19 August 1996: Final protocol on withdrawal of SRF from Kazakhstan signed," see [www.nti.org/e\\_research/profiles/Kazakhstan/Missile](http://www.nti.org/e_research/profiles/Kazakhstan/Missile)

<sup>94</sup> Ibid.

<sup>95</sup> Interview, Jim Reid, Director, CTR Policy Office, OSD, DOD, Washington, D.C., May 1, 2000, and Interview with Professor Victor A. Solomin and Dr. Vladimir Lyapunov, Institute of Chemical Sciences, Academy of Sciences, Kazakhstan, Almaty, March 7, 2001. All interviews with author.

<sup>96</sup> CTR Program Office, DOD, First-Half, Semi-Annual Report to Congress, Section 1207, Cooperative Threat Reduction Act of 1993, March 31, 1996, pp iv-9-10.

<sup>97</sup> K.K. Tokayev and V.S. Shkolnik, editors, *CTR in Kazakhstan*, p 37.

<sup>98</sup> CTR Program Office, DOD, First-Half, Semi-Annual Report to Congress, Section 1207, Cooperative Threat Reduction Act of 1993, March 31, 1996, pp iv-9-10. See also, CTR Program Office, DOD, First-Half, Semi-Annual Report to Congress, Section 1207, Cooperative Threat Reduction Act of 1993, March 31, 1997, pp 22-23.

<sup>99</sup> Interview, Jim Reid, Director, CTR Policy Office, Office of the Secretary of Defense, Washington, D.C., May 1, 2000.

<sup>100</sup> Interview with Professor Victor A. Solomin and Dr. Vladimir Lyapunov, Institute of Chemical Sciences, Academy of Sciences, Republic of Kazakhstan, Almaty, Kazakhstan, March 7, 2001. Interviews were with the author.

<sup>101</sup> Interview, Luke Kluchko, CTR Program Manager, DTRA, U.S. Embassy, Moscow, Russia, with Joseph P. Harahan, Historian, DTRA, March 30, 2000.

<sup>102</sup> Interview with Viktor A. Pabst, Alexander N. Golev, and Karshaubay Sh. Khusainov, Center for Defense Industries, Republic

of Kazakhstan, Almaty, Kazakhstan, with Joseph P. Harahan, Historian, DTRA, March 7, 2001.

<sup>103</sup> K.K. Tokayev and V.S. Shkolnik, editors, *CTR in Kazakhstan*, pp 37-38.

<sup>104</sup> Interview with Murat Bektemisov, General Director, and Alexander P. Toropov, Chief Engineer, Almatypromstri JCS, Almaty, Kazakhstan, with Joseph P. Harahan, Historian, DTRA, March 8, 2001.

<sup>105</sup> Interview with Alexander P. Toropov, Chief Engineer, Almatypromstri JCS, Almaty, Kazakhstan, with Joseph P. Harahan, Historian, DTRA, March 8, 2001.

<sup>106</sup> Interview with Alexander P. Toropov, Chief Engineer, Almatypromstri JCS, Almaty, Kazakhstan, March 8 2001.

<sup>107</sup> Interview with William Suzuki, Program Manager, SS-24 Elimination, Raytheon Corporation, Moscow, Russia, with Joseph P. Harahan, Historian, DTRA, July 20, 2005.

<sup>108</sup> Interview with Murat Bektemisov, General Director, and Alexander P. Toropov, Chief Engineer, Almatypromstri JCS, Almaty, Kazakhstan, March 2001; and Interview with William Suzuki, Program Manager, SS-24 Elimination, Raytheon Corporation, Moscow, Russia, July 20, 2005. All interviews with author.

<sup>109</sup> See Briefing Report, CTR Directorate, DTRA, "Nunn-Lugar, CTR, Kazakhstan," 18 January 2001. The final figures were: 104 launch silos, 16 launch control centers, 2 training silos at Derzhavinsk and Zhangiz-Tobe, and 12 launch silos at Balapan and 13 silos at Lenisk.

<sup>110</sup> Interview, Luke Kluchko, CTR Program Manager, DTRA, U.S. Embassy, Moscow, Russia, March 30, 2000.

<sup>111</sup> Interview with Viktor A. Pabst, Alexander N. Golev, and Karshaubay Sh. Khusainov, Center for Defense Industries, Republic of Kazakhstan, Almaty, Kazakhstan, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, March 7, 2001.

<sup>112</sup> Interview with Murat Bektemisov, General Director, Almatypromstri JCS, Almaty, Kazakhstan, March 8, 2001.

<sup>113</sup> "All Strategic Bombers Out Of Kazakhstan; Talks on Those in Ukraine" *Radio Free Liberty/ Radio Liberty, News Briefs*, vol. 3., No. 9, 21-25 February 1994, cited in [www.nti.org/e\\_research/profiles/kazakhstan/NuclearWeapons](http://www.nti.org/e_research/profiles/kazakhstan/NuclearWeapons)

<sup>114</sup> Tokayev and Shkolnik, editors, *CTR in Kazakhstan*, p 42.

<sup>115</sup> Briefing, CTR Program Office, Department of Defense, "Cooperative Threat Reduction Program Review, May 20, 1997.

<sup>116</sup> K.K. Tokayev and V.S. Shkolnik, eds., *CTR in Kazakhstan*, p. 42.

<sup>117</sup> Weekly Report, Arms Control Implementation Unit, U.S. Embassy, Almaty, Almaty, Kazakhstan, January 19, 1998.

<sup>118</sup> Ibid. Discussion with Lt. Colonel Burwell, Hq OSIA, February 1998.

<sup>119</sup> Tokayev and Shkolnik, editors, *CTR in Kazakhstan*, pp 40-41.

<sup>120</sup> Interview with Viktor A. Pabst, Alexander N. Golev, and Karshaubay Sh. Khusainov, Center for Defense Industries, Republic of Kazakhstan, Almaty, Kazakhstan, March 7, 2001. Interview with John Booker, CTR Program Manager, Kazakhstan, March 8, 2001. See Briefing Report, CTR Directorate, DTRA, "Nunn-Lugar, CTR, Kazakhstan ", 18 January 2001.

<sup>121</sup> Briefing Report, CTR Directorate, DTRA, "Nunn-Lugar, CTR, Kazakhstan," 18 January 2001. See also, Interview, Jim Reid, Director, CTR Policy Office, Office of the Secretary of Defense, Washington, D.C., with Joseph P. Harahan, Historian, DTRA, May 1, 2000.

<sup>122</sup> Briefing Report, CTR Directorate, DTRA, "Nunn-Lugar, CTR, Kazakhstan," 18 January 2001. Interview with Murat Bektemisov, General Director, and Alexander P. Toropov, Chief Engineer, Almatypromstri JCS, Almaty, Kazakhstan, March 2001; and Tokayev and Shkolnik, editors, *CTR in Kazakhstan*, pp 40-41.

<sup>123</sup> Alexander N. Golev, Report, Center for Defense Industries, Republic of Kazakhstan, Almaty, Kazakhstan, "Kazakhstan: No Nuclear Weapons," March 2001.

<sup>124</sup> Report, CTR Policy Office, Office of the Secretary of Defense, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2002", (January 2001).

<sup>125</sup> Interview, Professor Vladimir S. Shkolnik, Minister of Energy and Mineral Resources, Republic of Kazakhstan, Washington, D.C., with Joseph P. Harahan, Historian, DTRA, December 15, 2003.

<sup>126</sup> Jason D. Ellis, *Defense By Other Means*, pp 50-77. See also, Ashton B. Carter and William J. Perry, *Preventive Defense*, pp 8-20, 65-92.

<sup>127</sup> Interview, Jim Reid, Director, CTR Policy Office, Office of the Secretary of Defense, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., May 1, 2000.

<sup>128</sup> Letter, President William J. Clinton to President Nursultan A. Nazarbayev, November 25, 1994; John M. Broader, "U.S. Pledges \$400 Million to Kazakhs," *Los Angeles Times*, 15 February 1994.; Senator Sam Nunn, "Changing Threats in the Post-Cold War World," introduction to John M Shields and William C. Potter, *Dismantling the Cold War*, pp. ix-xx.

<sup>129</sup> White House Statement, Office of the Vice President, "U.S.-Kazakhstan Joint Commission," November 18, 1997. Statement contains history and functions of the bilateral commission.

<sup>130</sup> Ibid. See also, Interview, Dr. Olga G. Tyupkina, Executive Director, Institute for Non-Proliferation, Republic of Kazakhstan, with Joseph P. Harahan, Historian, DTRA, Almaty, Kazakhstan, March 5, 2001; and Interview, Jim Reid, Director, CTR Policy Office, Office of the Secretary of Defense, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., May 1, 2000.

<sup>131</sup> Interview, Dr. Harold E. Smith, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs, 1993-1998; see also Interview, Jim Reid, Director, CTR Policy Office, Office of the Secretary of Defense, Washington, D.C., May 1, 2000 and Interview, Professor Vladimir S. Shkolnik, Minister of Energy and Mineral Resources, Republic of Kazakhstan, Washington, D.C., December 15, 2003. All interviews with the author.

<sup>132</sup> White House Statement, Office of the Vice President, "U.S.-Kazakhstan Joint Commission," November 18, 1997.

<sup>133</sup> For context behind the U.S. Congressional legislation see, Ellis, *Defense By Other Means*, pp 37-39.

<sup>134</sup> See "Implementing Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of the Republic of Kazakhstan Concerning the Conversion

of Military Technologies and Capabilities into Civilian Activities", March 19, 1994, Almaty, Kazakhstan.

<sup>135</sup> Tokayev and Shkolnik, editors, *CTR in Kazakhstan*, p 78.

<sup>136</sup> Proceeding of Conference, "Building Industrial Partnerships in the Former Soviet Union," Industrial College of the Armed Forces, April 19, 1995. For Secretary Perry's remarks see, pp 21-25.

<sup>137</sup> Report. CTR Policy Office, Office of the Secretary of Defense, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2002", (January 2001), Appendix, B-1.

<sup>138</sup> Tokayev and Shkolnik, editors, *CTR in Kazakhstan*, p 78.

<sup>139</sup> Interview Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, 26 May 2000.

<sup>140</sup> Proceeding of Conference, "Building Industrial Partnerships in the Former Soviet Union," Industrial College of the Armed Forces, April 19, 1995, p. 228.

<sup>141</sup> Briefing, CTR Directorate, Defense Threat Reduction Agency, "CTR Programs, Republic of Kazakhstan," 8 November 1998.

<sup>142</sup> For these observations, I rely on Paul Boren. See Interview Paul Boren, Chief, Program Integration Division, CTR Directorate, DTRA, 26 May 2000.

<sup>143</sup> Ibid. See also, Interview, Harry Cook, CTR Program Manager, DTRA, with Joseph P. Harahan, Historian, DTRA, Fort Belvoir, Va, August 15, 2005.

<sup>144</sup> See remarks by Ambassador Carlos Pascual, Deputy Assistant Administrator for Europe and the NIS at the Agency for International Development, in the Proceedings of National Conference, "Building Industrial Partnerships in the Former Soviet Union," Industrial College of the Armed Forces, April 19, 1995., pp 63-69.

<sup>145</sup> Proceeding of National Conference, "Building Industrial Partnerships in the Former Soviet Union," Industrial College of the Armed Forces, April 19, 1995, p. 228.

<sup>146</sup> Report. CTR Policy Office, Office of the Secretary of Defense, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2002", (January 2001), pp III-52-53.

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<sup>148</sup> Tokayev and Shkolnik, editors, *CTR in Kazakhstan*, p 80.

<sup>149</sup> Briefing, CTR Program Managers, CTR Directorate, DTRA, "U.S.-Kazakhstan Overview of Implementation," 24 September 2001.

<sup>150</sup> Ibid. See also, Report. CTR Policy Office, Office of the Secretary of Defense, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2002", pp III-52-53.

<sup>151</sup> *Nuclear Threat Initiative, Kazakhstan Profile*, "Missile Chronology, June 2000," in [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles) (11 April 2007)

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<sup>153</sup> See *Arms Control Today*, "U.S.-Kazakhstan Extend CTR Program to 2007", <http://www.armscontrol.org/node/2889>; see also, *Nuclear Threat Initiative, Kazakhstan Profile*, "Nuclear Chronology," 3 July 2002, in [www.nti.org/e\\_research/profiles](http://www.nti.org/e_research/profiles).

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<sup>156</sup> Jonathan Tucker, "Biological Weapons in the Former Soviet Union: An Interview with Dr. Kenneth Alibek." *The Nonproliferation Review*, Spring/Summer 1999, p 2.

<sup>157</sup> *Ibid.*, p3.

<sup>158</sup> Bozheyeva, Kunakbayev, and Yeleukenov, "Former Soviet Biological Weapons Facilities in Kazakhstan: Past, Present, and Future," *Center for Nonproliferation Studies, Monterey Institute of International Studies*, June 1999, pp 10-11.

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<sup>160</sup> Bozheyeva, Kunakbayev, and Yeleukenov, "Former Soviet Biological Weapons Facilities in Kazakhstan: Past, Present, and Future," Report, *Center for Nonproliferation Studies*, June 1999, p 15.

<sup>161</sup> *Ibid.*, p 15; Tokayev and Shkolnik, editors, *CTR in Kazakhstan*, p 66-68; Interview, Harry Cook, CTR Program Manager, Fort Belvoir, Virginia, 15 August 2005.

<sup>162</sup> David Hoffman, *Dead Hand: the Untold Story of the Cold War Arms Race and the Its Dangerous Legacy*, (New York, 2009), p 461. I relied on Hoffman's account throughout this section.

<sup>163</sup> *Ibid.*, p.462.

<sup>164</sup> *Ibid.*, pp 463-464. Hoffman interviewed both Weber and Lepyoshkin.

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<sup>167</sup> *Ibid.*, 68-69; Bozheyeva, Kunakbayev, and Yeleukenov, "Former Soviet Biological Weapons Facilities in Kazakhstan: Past, Present, and Future," Report, *Center for Nonproliferation Studies*, June 1999, p 16.

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<sup>170</sup> Report, CTR Policy Office, DOD, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2002", pp. III-38.

<sup>171</sup> National Security Presidential Directive-17, "National Strategy to Combat Weapons of Mass Destruction," December 2002,

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<sup>173</sup> Bozheyeva, Kunakbayev, and Yeleukenov, "Former Soviet Biological Weapons Facilities in Kazakhstan: Past, Present, and Future," Report, *Center for Nonproliferation Studies*, June 1999.

<sup>174</sup> Report, CTR Policy Office, DOD, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2002", pp. III-38-44. Reference to the NSC Review in 2002, in U.S. GAO Report, "Weapons of Mass Destruction, Nonproliferation Programs Need Better Integration," January 2005, pp 7-8.

<sup>175</sup> Report, CTR Policy Office, DOD, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2002", pp. III-38-44.

<sup>176</sup> Report, CTR Policy Office, Office of the Secretary of Defense, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006", pp. 56-58. Note: information through January 2004.

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<sup>179</sup> Tokayev and Shkolnik, editors, *CTR in Kazakhstan*, pp. 72-73. (See project files too.)

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<sup>181</sup> Izvekova, "International Assistance for Anti-Plague Facilities in the Former Soviet Union to Prevent Proliferation of Biological Weapons," Occasional Paper, *Center for Nonproliferation Studies*, June 2005.

<sup>182</sup> "U.S. - Kazakhstan Sign Nunn-Lugar Agreement to Prevent Biological Weapons Proliferation," States News Service, December 8, 2004, <http://lexis-nexis.com>

<sup>183</sup> Report, CTR Policy Office, DOD, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006", pp. 56-58. Report, CTR Directorate, DTRA, "Nunn-Lugar CTR: Kazakhstan" September 2003.

<sup>184</sup> The U.S.-Georgia CTR implementing agreements had a number of iterations, see "Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of Georgia Concerning Cooperation in the Area of Prevention of Proliferation of Technology, Pathogens and Expertise Related to the Development of Biological Weapons", December 30, 2002, as amended March 23, 2004, August 30, 2004, and November 3, 2005. For Ukraine, the biological threat reduction implementing agreement was similar, except for a different

ministry. See, "Agreement Between the Department of Defense of the United States of America and the Ministry of Health of Ukraine Concerning Cooperation in the Area of Prevention of Proliferation of Technology, Pathogens and Expertise that could be used in the Development of Biological Weapons", December August 29, 2005.

<sup>185</sup> "Senior U.S. Senator, Kazakh Security Chiefs Discuss Non-Proliferation Cooperation," Lexis-Nexis, <http://www.lexis.nexis.com>

<sup>186</sup> Nursultan Nazarbayev, opening remarks at International Symposium, Ust-Kamenogorsk, Kazakhstan, October 8, 2005, published in *Kazakhstan's Nuclear Disarmament, A Global Model for a Safer World*, Washington, D.C., 2006.



## **Assisting Russia in Eliminating Nuclear Submarines, ICBMs, and Infrastructure**

The Russian government's experiences with its inherited strategic nuclear, chemical and biological weapons differed profoundly from that of Belarus, Ukraine and Kazakhstan. Not only did Russia retain nuclear weapons; it declared that it intended to remain a major world military power with operational sea, land and air nuclear forces. In the 1990s Yeltsin and the government adopted a foreign policy that insisted, even demanded the other nations in the region renounce the use of nuclear weapons, sign and ratify international nonproliferation and arms reduction treaties, and send all their nuclear warheads and nuclear materials to Russian storage depots and reprocessing facilities. Thus, only Russia retained a massive nuclear weapons complex manned with thousands of military officers, scientists, technicians and security specialists. In 1996, when Ukraine, Kazakhstan and Belarus became non-proliferation states, Russia's president declared that his nation possessed 40,000 tons of chemical weapons that had to be destroyed under the protocols and provisions of the Chemical Weapons Convention Treaty. In addition, Russia inherited an extensive network of former secret biological weapons production facilities and scientific research institutes.

By 1996, the U.S. Defense Department had approximately 100 people, including contractors and government officials, working on bilateral CTR programs negotiating, planning, estimating, acquiring, managing and sending reports to Congress.<sup>1</sup> Coordinating every new project with DOD officials, the White House and Congress, the CTR Program Office had increased its obligation rate by nearly nine-fold between 1994 to 1996; going from approximately \$100

million to over \$1 billion.<sup>2</sup> As this rapid expansion was underway, Secretary of Defense Perry asked John Deutsh, his deputy, to broker a major reorganization of the CTR program that transferred funding and responsibility for some programs and projects from the Department of Defense to the State, Commerce and Energy departments.<sup>3</sup>

Known as the "grand bargain" in program lore, this reorganization was driven by defense officials' desire to stop interagency committees in the White House from "micromanaging" all CTR programs. Secretary of Defense William J. Perry and Ashton Carter, the CTR program's senior policy manager, wanted to accelerate implementation of more than a dozen bilateral cooperative agreements, and to move faster on more than 50 projects already initiated with the new nations. They thought it was high time to move from bilateral negotiations on policy agreements and technical requirements to acquisition, delivery and actual project implementation.<sup>4</sup> Perry also wanted to focus CTR more on programs that worked directly with the Russian government and ministries to achieve compliance with the START I and II Treaties. In pushing this reorganization, the Defense Department was accused of policy domination and of "Balkanizing" the U.S. government's nonproliferation policies and programs with the newly independent states. Ambassador James Goodby and Rose Gottemoeller were concerned about loss of a centralized point of contact for administration policy.<sup>5</sup> The U.S. Congress did not share these concerns and endorsed the reorganization in the FY 1996 CTR authorization that appropriated new funds for nonproliferation, fissile material control and accounting,

and the international science centers. Success of the cooperative assistance programs in the next few years, and the continuation, even expansion of other CTR programs by Congress proved these concerns unfounded.<sup>6</sup>

In the fall of 1996, U.S. Congress went even farther to reform and expand the entire Nunn-Lugar assistance program. For the time, the FY 1997 National Defense Authorization Act named Cooperative Threat Reduction programs for a projected five-year funding period.<sup>7</sup> Senators Nunn and Lugar had been requesting a multi-year program plan from DOD for several years. Now the department responded, projecting its CTR projects and programs out to FY 2001.<sup>8</sup> The CTR Program Office instituted a bottom-up planning review that required every program manager to develop a separate, detailed plan for each CTR project. Using the Defense Department's standard planning format, the new project plans included a long-term funding profile for each project, a set of objectives, acquisition strategies, schedules, specific measurements of effectiveness and the basis for cost estimates. When all projects had been put through this analytical process they were then added to the five-year CTR program plan presented to Congress. Compared with previous managerial systems, this new process provided a more structured approach for the expanding program. From 1997 until 2000 all new CTR projects fit within one of the following five broad program objectives.<sup>9</sup>

- Assist Ukraine, Belarus, and Kazakhstan to become non-nuclear states
- Assist Russia in accelerating strategic arms reduction to the START Treaty levels
- Enhance the security, control, accounting, and centralization of nuclear weapons and fissile material in Russia to prevent their proliferation and encourage their reduction
- Initiate and accelerate Russia's chemical weapons destruction program
- Encourage military reductions and reform in the former Soviet Union states

Within the Russian government, Ministry of Defense and General Staff senior officials altered their opinion of the American assistance being offered. Russian officials, military and civilian, watched intently how CTR program managers worked with the governments of Ukraine, Kazakhstan, and

to a lesser degree, Belarus. Lieutenant General Vasily F. Lata, who served as the First Deputy Chief of Staff for the Strategic Rocket Forces in the 1990s, commented, "The eliminations in Ukraine were the first time that we had ever seen the (decommissioning and dismantlement) process carried out at such a rapid pace. So, later on in Russia, we naturally relied on General Mikhtyuk's experience with missile elimination."<sup>10</sup> As the director of strategic plans, Lieutenant General Lata briefed General Igor Sergeyev and the entire Strategic Rocket Forces' leadership on the experience of decommissioning and dismantlement of the 43<sup>rd</sup> Rocket Army. Lata explained that discussions went far beyond the briefing. General Sergeyev had his senior staff review and study how the Americans worked with the 43<sup>rd</sup> Rocket Army in Ukraine; how Bechtel's managers worked with Ukrainian subcontractors; and most significantly, how to transfer that experience to the Strategic Rocket Forces.<sup>11</sup>

### Clinton – Yeltsin Summit in Helsinki, March 1997

When Presidents Clinton and Yeltsin held their sixth summit meeting in Helsinki, Finland, the dominant topic was the pending enlargement of NATO. Yeltsin opposed it strongly, while Clinton supported it.<sup>12</sup> The Russian president even threatened to leave the Conventional Forces in Europe Treaty, not ratify the START II Treaty, curtail military cooperation with the United States, and reexamine any further diplomatic cooperation on the ongoing conflict in Bosnia. With a crumbling Russian economy, a weak central government, a continuing internal rebellion in Chechnya, and growing pressures from central European and Baltic nations seeking entry into the western military alliance, Yeltsin's influence was weak. By contrast, Clinton was in an exceptionally strong position. He had won reelection in the previous fall, the American economy was expanding and the nation was prosperous. During negotiations, Clinton rejected any secret deals but assured Yeltsin that any enlargement of NATO would be transparent, deliberate and that special provisions would be made for consultation with Russia. Clinton further promised Yeltsin that the United States would support and advance Russia's membership into the World Trade Organization, the Paris Club, the Organization for Economic Cooperation and Development, and the annual meetings of the world's seven wealthiest economies, the G-7.<sup>13</sup>

Frustrated by his inability to stop NATO enlargement, but with little leverage, Yeltsin dropped his threats and accepted the right of new nations to petition and join the alliance.

In joint statements, the presidents declared they intended to eliminate chemical weapons, reduce nuclear forces and cooperate on future research on anti-ballistic missiles. With regard to chemical weapons, Clinton and Yeltsin reaffirmed their resolve to expedite ratification of the Chemical Weapons Convention (CWC) Treaty, which was slated to enter into force the following month. The United States, Clinton declared, would seek congressional appropriations to build a facility in Russia for destruction of “neuroparalytic toxins” (nerve gas). On nuclear forces, the two presidents acknowledged that implementation of START I was ahead of schedule, while the Russian Duma still refused to ratify the 1993 START II Treaty. They agreed to delay until 2007 the date for final compliance to induce the parliament to ratify the treaty. They also affirmed that Belarus, Kazakhstan and Ukraine were nuclear free. Further they declared that once the START II treaty had been ratified and entered into force, the two

nations would immediately begin negotiations on the next treaty. Those treaty negotiations would have four principle objectives: lowering the aggregate strategic nuclear weapons to 2,500 by December 31, 2007; increasing transparency on nuclear warhead inventories and their destruction; ensuring the START treaties would be extended for an unlimited duration; and placing in a deactivated status by the end of December 2003 all strategic nuclear delivery vehicles slated for elimination under START II. Recognizing the last objective would be the most pressing issue for Russia, President Clinton declared, “[T]he United States is providing assistance through the Nunn-Lugar program to facilitate early deactivation.”<sup>14</sup>

### Linkage: From presidents to programs

Three weeks after the Helsinki summit, DOD CTR senior officials Roland Lajoie and Laura S. Holgate signed amendments to four existing CTR implementing agreements in Moscow.<sup>15</sup> These amendments authorized new projects and expanded existing ones. Holgate and Zinovy Pak, Minister



William J. Clinton Library

U.S. President William Clinton (l.) and Russian President Boris Yeltsin (r.) at Clinton-Yeltsin Summit in Helsinki, March 1997

of Defense Industries, signed an amendment to the Strategic Offensive Arms Eliminations (SOAE) Agreement increasing the level of assistance from \$231 to \$295 million. With Lieutenant General Igor Valynkin, 12<sup>th</sup> Main Directorate, General Staff, Holgate initialed an amendment to the Nuclear Weapons Storage Security agreement, adding \$15 million to the existing \$101 million program.<sup>16</sup> On another project, construction of a fissile materials storage facility at Mayak, Holgate and Alexei A. Markov, the Deputy Minister of Atomic Energy signed an amendment that added \$84 million to \$74 million already obligated, for a total of \$158 million. For destruction of chemical weapons, Holgate and Pavel Syutkin of the President's Committee on Conventional Problems of Chemical and Biological Weapons signed an amendment that doubled U.S. assistance for a facility that would destroy organophosphorus agent-filled artillery shells from \$68 to \$136 million. All in all, the United States increased its commitments by more than \$200 million.<sup>17</sup>



Lieutenant General Igor Valynkin

The expansion included a series of new projects. Among them a large multi-year program, financed completely by Nunn-Lugar funds, to assist the Russian government in eliminating 480 submarine-launched ballistic missile (SLBMs) launchers and 31 ballistic missile submarines (SSBNs), including five Typhoon-class submarines by 2003.<sup>18</sup> Another new project would fund removal of spent nuclear fuel from the Russian strategic submarine force and transport it to designated storage sites. A third project would provide dismantlement equipment and facilities to the three Russian shipyards located in the Arctic Sea and Pacific regions. To purge SS-18 rocket residual liquid fuels and then eliminate missile shells through a cutting and crushing process, U.S. CTR officials proposed to renovate an existing facility at Surovatikha, Russia. Two other new projects focused on eliminating large quantities of liquid and solid rocket fuels.<sup>19</sup> Plans envisioned a solid rocket fuel destruction facility at Votkinsk and new liquid fuel oxidizer elimination equipment for defueling SS-18, SS-19 and SS-20N missiles. The Russian ministries responsible for elimination of strategic offensive arms accepted these recommendations, and worked closely with American engineers and missile specialists, estimating the scope and complexity of the work. To fund the new projects, DOD asked Congress to increase the Russian SOAE program by \$598.5 million. This increase raised the CTR budget request for 1997 to 2001 from \$365 to \$964 million.<sup>20</sup>

Without a doubt, these new bilateral programs constituted a major expansion of the CTR effort with Russia. The desire to safeguard and reduce the number of weapons of mass destruction was at the heart of both nations' commitments, even though their motivations differed. President Clinton offered the Russian government new CTR assistance as an incentive to ratify the START II Treaty and further reduce the nation's strategic nuclear forces. Secretary Perry reiterated these goals to his counterpart, Defense Minister Gravchev, trying to convince him to accept the Nunn-Lugar aid to eliminate excess Russian strategic weapons to comply with deadlines set in START I, II, and the CWC treaties. In Congress, Senator Lugar persisted in persuading Congress to allocate funds for the new nations to use in meeting their nonproliferation and nuclear safety and national security objectives.

Following discussions with their colleagues, Yeltsin and Gravchev accepted the expanded CTR assistance to

eliminate the excessive weapons. More importantly, the abysmal state of the Russian economy made acceptance of funds imperative. As Nikolai Shumkov, the Russian official responsible for managing all eliminations explained, "Finally, there came a time when the Russian budget had absolutely no money for compliance with treaty obligations or elimination of weapons systems, and the systems continued to deteriorate to the point that they were unsafe for us and, well, for the entire world."<sup>21</sup> Political and military leaders acknowledged there was no alternative to accepting American and foreign assistance if they wanted to protect, secure and destroy the weapons and meet the treaty commitments.<sup>22</sup>

In 1998 deteriorating economic conditions in Russia propelled cooperation even farther. In August the Russian ruble collapsed suddenly; the government defaulted on private holders of government bonds, the stock market collapsed, banks closed, stores emptied, and foreign and Russian investors lost billions. Taking emergency measures, the government devaluated the currency, fired senior ministers, slashed its budget and announced a bank moratorium. Among Russian elites a backlash developed against Yeltsin's western policies and the assistance programs he had accepted enthusiastically.<sup>23</sup> In the Clinton administration, collapse of the Russian economy caused a reevaluation of its policies toward Russia. For six years the president had asserted in numerous international and domestic forums that assisting Russia in its transformation into a stable, democratic nation was his major foreign policy objective. Now that policy was severely undermined. In the months that followed, the administration turned away from direct financial aid and moved toward increasing security assistance to help Russia in its nonproliferation and anti-terrorism efforts.<sup>24</sup> Vice President Gore and his national security advisor, Leon Fuerth, led the effort.<sup>25</sup>

In the January 1999 State of the Union address to Congress, President Clinton declared the United States must increase its nonproliferation programs, specifically expanding "our work with Russia, Ukraine and the other former Soviet nations to safeguard nuclear materials and technology so they never fell into the wrong hands."<sup>26</sup> Clinton called on Congress to authorize spending \$4.5 billion from FY2000 to FY2004; an increase of approximately 60 percent for all nonproliferation projects and programs with nations of the region.<sup>27</sup> While Congress

did not agree on every aspect, it expanded CTR funds for the Departments of Energy and State significantly. In addition, a new consensus emerged among congressional and administration leaders that CTR programs with Russia would last for at least another decade.

The Department of Energy and Department of State both expanded existing programs and established new ones.<sup>28</sup> The Department of Energy expanded existing agreements and developed new programs in the Materials, Protection, Controls and Accounting (MPC&A) area, plutonium disposition, security for nuclear cities and proliferation protection.<sup>29</sup> By 1999, DOE had committed a total of \$800 million to MCP&A programs with 53 Russian nuclear cities and at those sites where highly enriched uranium or plutonium had been produced or stored.<sup>30</sup> The State Department had responsibility for funding and managing the International Science and Technical Center (ISTC) in Moscow, providing employment for more than 25,000 Russian nuclear scientists and technicians through project grants.<sup>31</sup> By the late-1990s, Russian and American bureaucracies had both adapted to these major program shifts and the well-established process of negotiating bilateral agreements, defining requirements, signing contracts, acquiring equipment and services, and managing projects was well underway. When Congress established the final CTR budget for FY 2000, they appropriated \$485.5 million to the Department of Defense, \$264.7 million to the Department of Energy, and \$ 250.5 million to the Department of State. For the first time, the combined appropriation for state and energy exceeded that of the defense department.<sup>32</sup>

## **Strategic Offensive Arms Eliminations (SOAE) in Russia**

By 1999 the Clinton Administration and DOD agreed to align all CTR programs and projects against the CTR program's second major objective: assisting Russia in accelerating strategic arms reductions to Strategic Arms Reduction Treaty levels. When the Russian Duma still refused to ratify START II, this time due to the Kosovo war, the deadline for reducing strategic weapons under START I reverted to the original date of December 2001. Both sides used treaty compliance date as bureaucratic leverage. Under the broad CTR program objective, American and Russian

officials developed requirements for 11 major projects and programs. Four of these programs assisted Russia in eliminating submarine launched ballistic missiles (SLBMs), the missile's liquid propellants, the submarine's radioactive waste materials, and the submarine, itself. Other programs assisted Russia in eliminating its land-based and mobile strategic rocket forces. In addition, there were two projects that would eliminate the number of excess Russian strategic bombers to the limits in START I treaty. These programs fell into the following three categories:

### *Strategic Offensive Arms Elimination Projects*

#### **Ballistic-Missile Submarines and Missiles**

- SLBM Launcher/SSBN Elimination SLBM Launcher Elimination Equipment
- Liquid Propellant ICBM/SLBM Elimination
- Low Level Radioactive Waste (LLRW) Reduction

#### **Fixed and Mobile Strategic Rocket Forces**

- ICBM Launcher and ICBM Elimination Equipment
- Liquid Propellant Fuels Transportation, Storage, and Disposition Systems
- Solid Propellant Missile Elimination
- Liquid Propellant ICBM/SLBM Elimination Emergency Response Support Equipment

#### **Heavy Bombers and Emergency Equipment**

- Heavy Bomber Elimination Equipment
- Emergency Response Support Equipment

As of January 2001, senior Defense Department officials had signed 38 CTR implementing agreements; 14 with Russian ministers and officials. In planning, organizing and managing the Russian Strategic Offensive Arms Elimination (SOAE) program, Nikolai Shumkov, Ministry of Defense Industry, was the key senior official. Key U.S. CTR officials managing and leading the SOAE program were Roland Lajoie, director of the CTR program office from 1994 to 1997 and Thomas E. Kuenning, Jr., his successor from 1997 to 2003. Air Force Colonel Jim Reid served as Kuenning's deputy. Navy Captain Ken Trass was responsible for managing all activities as the Russian Federation CTR country manager.

## **Russian SSBN submarine dismantlement: New levels of cooperation**

When President George H.W. Bush and President Mikhail Gorbachev signed the START I Treaty in July 1991, the Soviet Navy had 248 nuclear submarines, 62 of which were ballistic-missile submarines.<sup>33</sup> The Soviet Navy declared it had six types of ballistic missile submarines (SSBNs), equipped with 940 SLBMs, and 2,804 warheads.<sup>34</sup> The missiles had an estimated range of more than 9,000 nautical



Defense Threat Reduction Agency

Russian nuclear submarine in dock

miles.<sup>35</sup> During the Cold War the Soviet Navy organized its strategic nuclear submarines by class (Yankee, Hotel, Delta I, II, III or IV, and Typhoon), by combat patrol divisions (eight submarines per division), and then assigned them to fleets. By the mid-1990s, the Northern Fleet had one division of Typhoon-class submarines, two divisions of Delta III and IVs, and a few Yankee and Delta I-class submarines, slated for decommissioning. These submarines had been included in START I. The Pacific Fleet operated and maintained two submarine divisions of Delta I and IIIs, both based at Rybachiy Nuclear Submarine Base, located on the Kamchatka Peninsula. The Pacific Fleet also had numerous older, obsolete submarines slated for decommissioning.<sup>36</sup> Under normal conditions during the Cold War the Soviet Navy deployed 15 to 25 percent of its strategic submarine force at sea.<sup>37</sup> The table identifies designation, quantity, missiles, and warheads of the Soviet Union/Russian and the United States navies:

Table 8-1. U.S and USSR Start Nuclear Weapons Systems - 1991

U.S. Nuclear Weapon Systems SLBMs	Quantity Deployed SNDVs	Accountable-Warheads	USSR Nuclear Weapons Systems SLBMs	Quantity Deployed SNDVs	Accountable Warheads
Poseidon	192	1,920	SS-N-6	192	192
Trident I	384	3,072	SS-N-8	280	280
Trident II	96	768	SS-N-17	12	12
			SS-N-18	224	672
			SS-N-20	120	1,200
			SS-N-23	112	448
<b>Total</b>	<b>672</b>	<b>5,760</b>		<b>940</b>	<b>2,804</b>

Source: Annex A, B, and C of the START Treaty, 31 July 1991

Even before the treaty was signed in July 1991, the Soviet Navy planned to meet its treaty reduction limits by decommissioning and dismantling all of its second generation SS-N-6, SS-N-8 and SS-N-17 strategic submarines, because their service life would expire by 1999. Altogether, in these three classes there were 29 submarines, 484 SLBMs and 484 treaty-accountable warheads. When Presidents Yeltsin and Bush signed the START II Treaty in January 1993, the Russian government agreed to a 50 percent reduction below previous treaty limits in attributed warheads for deployed ICBMs and SLBMs. Under this treaty, the Russian Navy planned to reduce the number of deployed SLBMs from 2,804 to 1,750 attributed warheads.<sup>38</sup>

In the 1990s, several forces compelled the Russian Navy to decommission more than 80 percent of its nuclear submarines. The Russian Duma cut the defense budget so severely it forced the Navy to order drastic cuts in its operational submarine and surface forces. Many of these submarines had been in service for more than 25 years and had exceeded their operational life. In addition, some boats had been damaged in accidents, a few so severely they were beyond repair. By late 1993 the Russian Navy decommissioned 90 nuclear-powered submarines; in 1996 it ordered another 60 submarines removed from service and

in 1999, another 30.<sup>39</sup> As the Russian Navy's operational fleet shrank, the number of its decommissioned nuclear submarines grew alarmingly large.

Submarine deactivation was a complex process, requiring modern shipyards with a technical infrastructure; specifically liquid-waste storage facilities, provisions for offloading spent nuclear fuel, special railroad vehicles for transporting radioactive fuel, and secure storage facilities. Since few of these facilities existed in the Russian Navy, virtually all the decommissioned nuclear submarines sat in storage in the Northern and Pacific Fleet's bases and harbors, with little maintenance or activity. As environmental, safety and security concerns grew over the future of these submarines, they became major issues for the Russian Navy, Ministry of Defense and the Russian government.<sup>40</sup>

To deal with these issues, as early as July 1992 the Russian government directed the transfer of nine older decommissioned nuclear submarines, slated for dismantlement, from the Russian Navy to three naval shipyards that fell under the jurisdiction of the Ministry of Defense Industry.<sup>41</sup> This decree established a pattern for all subsequent submarine dismantlement work. One of the naval shipyards was located near Severodvinsk, a closed city

## With Courage and Persistence

located on the White Sea. On an inlet, there were two large shipyards; the Zvezdochka Machine Building Enterprise and the SevMash Production Association. Together, these two shipyards constituted the largest nuclear submarine construction and ship repair facilities in all of Russia, covering some six square miles. Another naval shipyard, the Nerpa Ship Repair Facility was located on the Kola Peninsula in the Arctic Sea. In the Pacific, the Zvezda Far East Factory at Bolshoi Kamen, Vladivostok was the third naval shipyard identified as a submarine dismantlement site. In 1994 and again in 1995, the Russian government announced plans for improvements and construction of new dry docks at Zvezdochka, Sevmash, and Nerpa and for acquiring specialized new equipment to remove the decommissioned sub's spent nuclear fuel. Although these promises from Moscow were empty and never fulfilled, the assignment of specific naval yards proved to be significant.<sup>42</sup>

From the beginning, Russian officials based their decrees on the assumption that decommissioning and dismantling nuclear submarines would be self-financing. Engineers estimated that each submarine contained thousands of tons of scrap metals; metals that could be sold on international markets. A Delta I-class sub would produce 2,300 tons of

scrap metals, including tons of stainless steel, non-ferrous metals, titanium alloy, copper wiring and lead.<sup>43</sup> A Yankee-class sub would generate 3,600 tons of commercial-grade scrap metal. The government granted the three designated shipyards the opportunity to set up joint ventures with commercial enterprises. In October 1992, the northern tier shipyards and naval design firms set up Ekon, a new Russian stock corporation in Severodvinsk. Led by former senior Russian Navy officers, Ekon received the initial contracts to dismantle decommissioned nuclear submarines at the Zvezdochka naval shipyard.<sup>44</sup> Engineers at Rubin Central Design Bureau in St. Petersburg, which had designed the Delta class submarines, drew up detailed dismantlement plans. The sequence of deconstruction was removal of the submarine's ballistic missiles, removal of spent nuclear fuels, and dismantlement of the missile launchers. Destruction also included radiological decontamination, removal of internal equipment to be recycled, removal of the reactor compartment and its delivery to a secure location, cutting up of the submarine hull and compression of salvaged metals into universal cubic meter blocks for sale. Dismantling a Delta I-Class submarine required an estimated 32,000 man hours.<sup>45</sup>



Defense Threat Reduction Agency

Dismantlement of Russian nuclear submarine

By the spring of 1993, the Russian government, its ministries, and the Russian Navy had defined the various roles and missions to begin submarine decommissioning and dismantlement. At this point, U.S. Defense Department CTR officials met with Ministry of Defense Industry officials in Moscow and discussed technical requirements for new American-purchased equipment that would assist Russia shipyards in dismantling the submarines. In these initial meetings, Colonel Jim Reid and Commander Michael Demio explained to Nikolai Shumkov that Congress had limited American assistance to dismantlement of "submarine-launched ballistic missiles and the launchers for such missiles."<sup>46</sup> This meant U.S. assistance would be provided only to the Zvezdochka, Zvezda and Nerpa shipyards.<sup>47</sup>

In August 1993 Russian and American officials signed an annex to the Strategic Offensive Arms Elimination (SOAE) implementing agreement, and U.S. program managers in Washington began the process of acquiring, receiving and shipping the new technical equipment to Russian shipyards.<sup>48</sup> Initial equipment included cranes with magnetic lifting devices, cutting tools, excavators with dismantlement blades, guillotine balers and cable choppers. Services included equipment delivery and periodic maintenance at the site, which was important due to severe weather conditions in northern arctic shipyards.<sup>49</sup> Actual deliveries began in September 1994 and were completed two years later. In those years submarine dismantlement was a Russian program; the ministry and naval shipyards controlled the schedule, cost and results. Dismantlement work began in 1994, but went slowly in the designated yards since there was little or no existing infrastructure equipment, and the Russian government's financial conditions declined precipitously.

## Crisis in the Russian Navy

In 1994 the Russian Navy's Northern Fleet budget requested 600 billion rubles for all operations. In fact, it received less than 35 percent of that amount.<sup>50</sup> The following year it received even less. In both the Northern and Pacific Fleets, naval officers and seamen had their wages cut, then suspended entirely for several months. Some officers refused to go to sea. The Russian Navy curtailed all operations, postponed maintenance and halted almost all new construction projects. When ballistic-missile submarines went on combat patrol, the complement of qualified

officers had to be reduced. Shipyard workers were not paid. Thousands of workers at Sevmas, Zvezdochka and Nerpa worked without pay, accumulating wage arrears.<sup>51</sup> One day in late September 1995, the local power company shut off electricity to a naval base at Gadzhievo. Apparently, the Russian Navy owed the company \$4.5 million in unpaid bills.<sup>52</sup> When power was quickly restored quickly, the Northern Fleet Commander characterized the event as episodic, indicating it would not occur again. Five days later, electric power was shut off again, this time at another naval base.<sup>53</sup> Admiral Yerofeev, the Northern Fleet's Commander-in-Chief spoke out on the issue and the increasing number of decommissioned and inactive nuclear submarines. "The problems of storing spent nuclear fuel, radioactive waste, inactive submarines, and the lack of servicing for submarines in active service are a problem," the admiral stated, "not only for the Northern Fleet, but also for the Russian state. If measures are not taken to address the situation today, over a period of time, the situation could become critical and lead to an ecological disaster."<sup>54</sup>

In Washington Secretary of Defense Perry became alarmed because it appeared that American CTR assistance, and assistance from other nations, would fail to assist Russia to convert their defense industries and meet requirements of the START Treaty.<sup>55</sup> Norway was especially worried about an ecological disaster if the Russian government abandoned its decommissioned radioactive nuclear submarines in arctic waters.<sup>56</sup> In Moscow, Director Shumkov admitted, "There came a time when the Russian budget had absolutely no money" for treaty compliance or for elimination of weapons systems.<sup>57</sup> In August 1996, Shumkov accompanied Lajoie, Reid and Captain Trass to the Arctic naval shipyard at Severodvinsk. There they met with Russian shipyard general directors Nikolai Y. Kalistratov of the Zvezdochka Machine Building Association, Valery A. Maslakov from the Zvezda Far East Factory and Pavel Steblin from the Nerpa Ship Repair Factory.

They were ready to discuss every aspect of SSBN and SLBM dismantlement and elimination. In three years, American CTR project managers and Russian shipyard directors had developed a degree of mutual trust. The directors pointed out their shipyards were trying to become commercial enterprises, and needed work. For policy reasons, however, the Americans could only offer CTR funds for those programs leading to elimination of treaty designated strategic ballistic missile

submarines.<sup>58</sup> The Americans further explained how the U.S. government had used an “integrating contractor” concept to organize, schedule and manage all aspects of strategic weapons system dismantlement.<sup>59</sup> The directors were not persuaded, arguing that they were trying to become business enterprises, capable of managing naval dismantlement and construction projects. They made this point again in October 1996 when Secretary Perry and Senators Nunn, Lugar and Lieberman toured the Zvezdochka shipyard to observe workers dismantling a nuclear submarine.<sup>60</sup>

Perry, who was extraordinarily interested in defense conversion at the time, listened carefully. The shipyard’s record of performance was not convincing. In three years, all Russian naval shipyards had worked on four START Treaty ballistic-missile submarines but had yet to dismantle a single SSBN completely. Combined, the shipyards had eliminated

dismantlement effort. As negotiations proceeded there were two major developments. The Russian Minister of Finance declared there was no money in the government’s budget for deactivating and dismantling Russia’s START Treaty strategic submarines, missiles and bombers. If the work was to be done, the United States and other foreign nations would have to foot the bill. At Secretary Perry’s urging, the department’s CTR managers reexamined their assumptions regarding the Russian government’s capacity to do the work. Russia had become a financially weak nation, incapable of carrying out its international obligations, whether it involved sending troops to Bosnia, paying its foreign debts or dismantling nuclear submarines. Gradually, American defense officials came to accept a larger, more direct role in financing and managing deactivation and dismantling Russian strategic weapons systems.



Defense Threat Reduction Agency

Ashton Carter, Secretary of Defense Perry, Senators Nunn, Lieberman and Lugar at Zvezdochka shipyard, October 1996

64 SLBM launchers, but to meet the Russian government’s START Treaty obligations by 2001, the shipyards would have to eliminate an additional 492 SLBMs.<sup>61</sup> Complicating any resolution were problems of storing the missiles’ liquid and solid fuels, downloading and storing the submarines’ spent nuclear fuel and offloading, storing and transporting the radioactive waste. Everyone knew these problems would be technically difficult and expensive to resolve.

At the site, Secretary Perry told CTR program managers to find better ways to work with the Russian shipyards. This decision set in motion more than a dozen technical meetings in Moscow and Washington over the next year and a half that essentially reshaped the entire submarine

### Firm, fixed-price contracts for dismantling ballistic-missile submarines

Negotiations leading to direct contracts with Russian shipyards took nearly 18 months. Both groups, Russian shipyard directors and American CTR officials, were uncertain at first. The Russian shipyard directors had spent their entire professional careers in a state-controlled system and had no experience with commercial contracts. The American CTR program managers were only too aware of this fact and were deeply skeptical of the Russian shipyards’ ability to undertake and carry out complex new projects governed by U.S. laws and regulations. Despite the support of Secretary Perry and Senators Nunn, Lugar and others, American CTR officials were concerned about the specter of failure and with it, public and congressional criticism. In the end, after countless meetings examining every detail of the submarine dismantlement process, Russians and Americans both took risks, and in doing so demonstrated courage.

In late fall 1997, General Kuenning and Colonel Reid, the DOD’s senior CTR program officials recommended through OSD to Secretary of Defense William Cohen that the program contract directly with each of the Russian shipyards. Risk existed, they explained, but the contracts would be firm, fixed-price, requiring each shipyard to defuel and eliminate a specific ballistic missile-class submarine. Cohen agreed and in December, he told Russian defense officials visiting the Pentagon that the department would try this new contracting

method with the Russian naval shipyards. At the meeting, Edward Baal, deputy director of production at Zvezdochka, reacted with surprise, “because we honestly didn’t expect such a proposal.”<sup>62</sup> Less than six months later the two sides had negotiated formal statements of work, dismantlement schedules and agreements on wages and prices.

Using the new fixed-price contracts had several advantages for the United States. The first was that this arrangement did not require continuous access to the Russian shipyards, which would be difficult at best, since the Russian Navy had active contracts to build new submarines and surface ships with these same shipyards. The second factor was cost. CTR officials estimated that contracting with an American corporation to serve as an integrating contractor would add approximately \$2 million per dismantled submarine, or \$62 million for the entire project.<sup>63</sup> Finally, a firm, fixed-price contract would have significantly less risk. When this type of contract was awarded, the funding party had little or no risk if the work was not completed on schedule because it would not have to pay until it had been completed to its satisfaction.<sup>64</sup>

Nikolai Kalistratov, general director of the Zvezdochka Machine Building Enterprise in Severodvinsk, signed the first direct contract in March 1998 for \$4,254,241 to dismantle and eliminate a Delta-class SSBN.<sup>65</sup> David Freeman, a Defense Department senior contracting specialist, together with Reid, Trass, Lieutenant Colonel Ron Alberto and Lieutenant Commander Mark Baker evaluated the proposal and awarded the contract. Since the Delta-class submarine was already at the dock in the Zvezdochka shipyard, and had been partially dismantled, this first contract was somewhat smaller. The submarine’s ballistic missiles had been removed and defueled, the launch tubes had been cut out and the nuclear reactor partially defueled. At the same meeting, American CTR officials announced they would fund a separate CTR project, estimated at \$881,337, to provide the Zvezdochka facility with new equipment for infrastructure improvements in the submarine elimination areas.<sup>66</sup> Two months later, in May 1998, Pavel Steblin, director of the Nerpa Ship Repair Facility signed a firm, fixed-price contract for \$12,157,501 to dismantle and eliminate two Delta-class strategic submarines.<sup>67</sup> On the same day, CTR officials also offered new submarine infrastructure equipment, estimated at \$842,762 for the Nerpa facility. In the Far East, Valery Maslakov, director of the naval shipyard at Bolshoi Kamen, signed the initial firm, fixed-price contract in January 1999

for \$11,489,630 to eliminate one Delta-class and one Yankee-class submarine.<sup>68</sup> That shipyard also received the same CTR package of infrastructure equipment for eliminating the SSBNs.

These direct contracts provided a much needed cash infusion into a desperate situation. A few months after signing the initial contracts, the Zvezdochka shipyard had 1,000 workers dismantling ballistic-missile submarines. The Nerpa facility had hired approximately 600 workers, and in the Far East at the Vladivostok shipyard there were between 800 and 1,000 workers, depending on the stage of submarine elimination. All three naval facilities began receiving new, modern dismantlement equipment, which would remain at the yards when the projects had been completed.<sup>69</sup> At Zvezdochka, dismantlement work was so robust that CTR officials awarded another contract in June 1998 to eliminate

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## New Development

### Firm, Fixed-Price Contracts

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two Delta-class subs for \$12,594,081, and they announced that additional lighting towers and defueling equipment for the shipyard would be funded under the CTR program for \$1,270,175.<sup>70</sup> In the process, Russian shipyards learned American business practices, which they used years later in soliciting and bidding for naval dismantlement work from other nations.<sup>71</sup>

In all these direct contracts, the process began when the general directors of the shipyards received notification from the Ministry of Defense and the Russian Navy that a SSBN sub had been decommissioned and was ready for dismantling. The shipyard director then submitted a formal contract proposal to DOD, requesting a firm-fixed price contract to carry out the SSBN/SLBM dismantlement work. In Washington, CTR specialists analyzed the Russian proposal, developed independent government cost estimates, and then traveled to the respective shipyards to negotiate specific milestones and a series of deliverables, so that the dismantlement work could be verified in stages prior to payment. In 1999, additional direct contracts went to all three Russian shipyards. That same year the Russian government identified a fourth shipyard, the SevMash Production Association in Sverdovinsk, as a

Table 8-2. SSBN Contracting Schedule, 1998-2001

	FY1998	FY1999	FY2000	FY2001	FY97-FY01
<b>Zvezdochka</b>	3	2	0	0	5
<b>Zvezda</b>	2	4	0	3	9
<b>SevMash</b>	0	1	0	0	1
<b>Nerpa</b>	2	3	0	0	5
<b>Totals</b>	7	10	0	3	20

Source: Fact Sheet, SLBM launcher Elimination/SSBN Dismantlement, December 2000, CTR Directorate, DTRA.

dismantlement site for Typhoon-class submarines. Without a doubt, American contracts accelerated the submarine dismantlement process. Before 1998, Russian shipyards planned to dismantle one submarine every 16 to 18 months, after 1998, the rate was one every six to nine months. The chart indicates the accelerated rate.

At some point in 2000, the Russian Navy and Ministry of Defense proposed that DOD expand the cooperative programs to dismantle additional ballistic-missile nuclear submarines. Instead of 31 strategic submarines and 452 ballistic missiles, Russian officials proposed dismantling a total of 42 submarines and 612 SLBM missiles and launchers.<sup>72</sup> After negotiations and further senior-level discussions, the CTR bilateral implementing agreements were amended and program planning initiated to expand and extend the program through 2008.<sup>73</sup>

### Cycle of submarine, missile, and launcher dismantlement

The basic process for dismantling ballistic missile submarines was well established. It had been set by the Russian submarine design bureau, the Russian Navy and Ministry for Defense Economy. First the Russian Navy transferred decommissioned submarines, with its missiles, to one of the designated shipyards. Prior to decommissioning, the Russian Navy and MinAtom nuclear technicians had removed warheads from the missiles. Next, the ballistic missiles would be removed from the submarines. By 1997, the Navy had identified 597 liquid-fuel missiles, specifically

SS-N-6, SS-N- 8, SS-N-18 and SS-N-23 missiles, for removal. The submarines were based in the Northern and Pacific Fleets. The Navy also identified 80 solid-propellant missiles for elimination; these were deployed on SS-N-20 submarines.<sup>74</sup> The removal process for liquid rockets began when Russian shipyards contracted with local firms to remove ballistic missiles from the submarines. These Russian firms used American equipment, provided by the CTR program, to lift the liquid fuel rockets, resting in specially-designed canisters, from the sub to the dock. From 1993 to 1997, the work went slowly, delayed by the lack of equipment and funding. In 1998 two American CTR contracting officers, Lieutenant Colonel Ron Alberto and Commander Mark Baker, began working with the shipyard’s engineering staffs to define technical requirements for a series of shipyard infrastructure improvement projects. These included contracting with Russian firms for new concrete foundations for heavy cranes, new lighting towers, modern scaffolding and electrical distribution systems at each shipyard.

Working with these Russian officials, Baker developed a SLBM project that involved using CTR funds to refurbish a Russian Navy defueling facilities at the Revda Naval Base, the Sergiev Posad Design Institute, and the Krasnoyarsk KrasMash facility. In June 1998, Commander Baker awarded a direct contract to the Scientific Test Institute for Chemical and Building Machines at Revda to refurbish its SLBM defueling and neutralization facility. Other direct contracts funded improvements at the SLBM liquid-fuel defueling and neutralization project at Sergei Posad, and the refurbishing of a defueling facility in the Far East at the

Yuzhnorechensk Naval Storage Facility near Vladivostok.<sup>75</sup> Under this CTR project, the U.S. provided heavy cranes to lift missiles from the submarines, transportation systems to move the missiles into defueling facilities, and equipment to dismantle the empty missile casings: metal cutting tools, scrap balers, and emergency response equipment. The objective, when the three facilities were operating at full-tilt, was to defuel and neutralize approximately 100 submarine ballistic missiles annually.<sup>76</sup>

This cooperative project worked well, as the number of SLBMs eliminated jumped from 30 in mid-1999 to 238 as of December 2001.<sup>77</sup> In the next step, Baker used CTR funds to contract with local shipyard firms and the Krasnoyarsk State Enterprise to begin defueling liquid rockets on-site in the refurbished defueling and neutralization facilities. As the missile defueling program accelerated, rocket fuel was placed into temporary effluent storage tanks. By 2001, the five-year cost for these projects was projected at \$40 million.<sup>78</sup>

Following neutralization, rockets were displayed in the shipyard's open storage areas for 90 days as required by inspection protocols in the START Treaty. Using satellite technology, the U.S. could observe the number and type of ballistic missiles removed from the submarines. Two additional steps completed the process. After the mandatory treaty display period, Russian workers placed the defueled rockets into a special box-like cutting machine, and the empty missile's metal shells were shredded, compacted and then bundled into metal bales. The metal bales were then prepared for sale on the international scrap metal market.<sup>79</sup>

The final step was to transport and dispose of ballistic missile liquid rocket fuel. Since many of these submarine liquid fueled rockets had been adapted from land-based ICBMs, specifically SS-18s, SS-19s and SS-23s, Russian missile specialists proposed a plan as early as 1993 to transport excess fuel from both SLBMs and ICBMs. Their plan was to transport an estimated 33,000 tons of heptyl fuel, and 135,000 tons of the oxidizer, amyl, to a central elimination facility in the Urals. In April 1995, after protracted negotiations, the Defense Nuclear Agency awarded a design contract to Thiokol Corporation for a new liquid-fuel heptyl conversion facility in Krasnoyarsk. By 2001, the U.S. CTR program had obligated \$94.4 million toward this new project.<sup>80</sup> At the same time, the CTR program also contracted with the Russian rail system to transport rocket fuel from the naval shipyards to MOD fuel storage bases in Ilyino, Moshkovo, Mulyanka, Rada,

Turinskaya and Vanino, and from there to the Krasnoyarsk. The contract provided the Russian rail system with 125 flatbed railcars, 670 intermodal tank containers and seven cranes for lifting containers from the dock to railcars. From 1995 to 2001, the CTR program obligated \$47.8 million for transporting and temporarily storing liquid fuels.<sup>81</sup>

The bulk of the liquid rocket fuel was in the oxidizer, for which U.S. officials proposed to Nikolai Shumkov and engineers at the Russian Ministry of Economy, to fund and deliver two new American-made systems that would convert amyl oxidizer into nitric acid. Shumkov accepted and decided that the new amyl disposal systems would be placed in Krasnoyarsk and Aleksin. In June 1999, Bechtel National was awarded a contract to design, fabricate and test two mobile conversion systems. Once again, CTR funds flowed out and by mid-2002 the program had obligated \$17.1 million.<sup>82</sup> In mid-September 1999, U.S. CTR officials had signed direct contracts with the Russian shipyards to dismantle 10 ballistic-missile submarines. The following year, another seven submarines would be under contract. At that time, Russian and American officials projected the Russian submarine program would eliminate a total of 31 SSBNs and 452 SLBM launchers and missiles.<sup>83</sup> By 2001 the two nations were projecting Russia would eliminate 41 ballistic-missile submarines and 612 SLBMs. CTR program officers estimated the five-year cost



Dismantlement of Russian nuclear submarine

Defense Threat Reduction Agency

would be \$385 million.<sup>84</sup> To sustain operations at such a rate, Russian shipyard directors and American program managers were already implementing a series of projects that would enable the shipyards to maintain, and possibly accelerate the pace of dismantling ballistic-missile nuclear submarines.

One of these projects, the Low-Level Radioactive Waste Reduction System became operational at the Zvezdochka Shipyard in October 2000 and at the Zvezda shipyard in August 2001.<sup>85</sup> This system, completely financed with CTR funds, sought to reduce the liquid and solid radioactive waste products generated from dismantlement of each submarine's two nuclear reactors. Not one of the Russian shipyards had a system or equipment capable of treating the large volume of low-level radioactive water that resulted from laundering contaminated clothing and washing dismantlement equipment. Excess water was simply discharged into the sea. In August 1998, Lockheed-Martin Corporation and Aspect Association, a Russian firm, received a CTR-funded contract to build and maintain a Low-Level Radioactive Waste Reduction System at the Zvezdochka yard. The \$16 million contract stipulated construction of a solid-waste treatment facility, with decontamination equipment and a low-force compactor. It also included installation of a liquid-waste treatment system that used Russian sorbent technology, and a laundry waste-water treatment system. These systems reduced the volume of liquid coolants by more than 176,000 cubic feet a year and solid waste products by more than 7,000 cubic feet annually. Essentially, these new systems filtered and chemically removed radioactive isotopes from dismantlement-related liquids, then stabilized the isotopes and reduced the volume of liquids and solids. Of special interest was the demand by Russian nuclear regulators that the project meet the standards of the UN's International Atomic Energy Agency. Once completed, Russian workers at the Zvezdochka shipyard operated the systems.<sup>86</sup>

### International cooperation and participation

When the Zvezdochka Low-Level Radioactive Waste Treatment facility opened in October 2000, representatives from Japan, Norway, France and the United Kingdom traveled to the arctic shipyard to see the new facility and be briefed on the new technologies.<sup>87</sup> Jens Stoltenberg, Prime Minister of Norway and Toshiyuki Kawakami, Secretary

General of the Japan-Russian Committee for Cooperating on Reducing Nuclear Weapons, were especially interested in the environmental aspects of these new technologies. Each year, the Northern Fleet generated approximately 390,000 cubic feet of liquid radioactive waste and more than 123,000 cubic feet of solid radioactive waste. In addition, during the 1980s and 1990s the Northern Fleet had stored approximately 25,000 spent fuel assemblies at naval storage facilities that lacked sufficient capability for reprocessing the radioactive waste.<sup>88</sup> The Pacific Fleet had a smaller number of spent fuel assemblies, but the excess of radioactive materials was still a major issue. For nations sharing the same oceans and currents, this amount of radioactive waste represented an environmental threat. One direct consequence was that Norway, Sweden, Japan and other nations developed new cooperative projects with the Russian Federation. The Japanese government was especially active in the Far East.

Secretary General Kawakami explained that Japan had committed \$200 million to cooperative projects that reduced excess nuclear materials in the Russian Federation.<sup>89</sup> They proposed, and Russia accepted a project that would convert low-level liquid radioactive waste by cycling it through a Japanese produced floating filtration plant, which would be docked at the Zvezda Shipyard at Bolshoi Kamen. The Japanese barge and filtration plant, called the "Landysh," was capable of processing up to 7,000 tons of liquid waste annually. Built at a cost of \$29 million, the new floating plant became operational in October 2000.<sup>90</sup> Together with the CTR-funded Low-Level Radioactive Waste Reduction System at the Zvezdochka yard, the Japanese plant reduced systemic delays in processing the dismantled nuclear submarine's low-level radioactive waste and the associated environmental threat.

As the submarines were being dismantled another major technical issue surfaced; what to do with the large quantities of the nuclear submarines' spent naval fuel? Most Russian nuclear submarines had two reactors. They operated continuously, and even the decommissioned nuclear submarines contained full loads of radioactive fuel. During dismantlement, these reactors had to be safely defueled and removed. Since the reactors' spent fuel contained highly enriched uranium (U-235) and plutonium (U-239), it constituted both an environmental problem and a proliferation threat if the spent fuel was not safely removed and securely stored securely<sup>91</sup> In the past,

when the Russian Navy ordered the spent fuel assemblies removed from reactors, they were lifted out by specially built cranes mounted on naval service vessels, and then transported to naval bases for temporary storage. After three years the spent naval fuel was placed in special containers and transported by rail thousands of kilometers to the Urals, then placed into a secure, central storage facility at the Mayak Chemical Combine. However, the Russian rail system had just 18 special railroad containers that could be assembled into the trains and transported from either the Russian Navy's Northern or Pacific Fleet storage facilities to Mayak. The number of containers was simply insufficient. Severe backlogs developed, accentuated by the Russian Navy's financial and technical problems.<sup>92</sup> When the American CTR program contracted directly with the Russian shipyards to eliminate ballistic-missile subs, the pace at which subs were dismantled increased, and so did the volume of spent naval fuel.

Consequently, CTR manager Alberto concluded that spent fuel had become a "nemesis" holding back the entire submarine dismantlement program.<sup>93</sup> Essentially, there were four major technical issues: inadequate spent fuel offloading capacity at the shipyards, lack of adequate interim storage facilities, lack of transport containers and special railcars, and lack of facilities for long-term processing and storage of the highly radioactive reactor compartments. Like the issues surrounding the low-level radioactive waste plants, resolution of the spent nuclear fuel issues would involve American, Russian and other nations.<sup>94</sup>

The Russian government requested U.S. CTR assistance to manage the large volume of spent naval fuel offloaded from the ballistic-missile subs being dismantled at the Zvezdochka, Nerpa and Zvezda shipyards.<sup>95</sup> The U.S. government agreed to support disposal of the spent fuel of up to 15 dismantled subs. A new amendment to the Strategic Offensive Arms Elimination Implementing Agreement was signed in August 1999, and shortly thereafter the Mayak Association was awarded a contract to reprocess the spent naval fuel's uranium for use in Russian civilian reactors, and store the plutonium in the association's storage facilities. This CTR agreement and contract involved DOD, DOE, MinEcon, MinAtom and the Mayak Association. It provided a discrete system for reprocessing spent naval fuel and a tentative commitment for American inspections of the process at the Mayak facility.<sup>96</sup> When submarine dismantlement work



Low Level Radioactive Waste Volume Reduction Project

began, the Russian shipyards had contracted with the Navy to use its spent naval fueling vessels to offload fuel from the submarines to temporary storage tanks in the shipyards. Jim Reid explained that shipyard directors were not satisfied with this arrangement since the Russian Navy's vessels had poor equipment, aging components and lacked international safety certifications for handling nuclear materials.<sup>97</sup> After U.S. engineers certified these conditions, Reid agreed to contract with the Russian shipyards for replacing and repairing the defueling components on the Navy's vessels and securing international safety certifications. Simultaneously, the CTR program agreed to fund construction of new on-shore defueling facilities at Zvezdochka and Zvezda.<sup>98</sup>

With these decisions, shipyard directors and CTR program managers solved the immediate problems associated with the Russian Navy's spent fuel offloading vessels and a longer-term issue of providing the shipyards with a permanent on-shore defueling facility. In addition, American CTR program officers contracted with the Mayak Association to process and store the submarine spent naval fuel for up to 15 ballistic-missile subs. Spent fuel from any additional dismantled subs would be dry stored. Even before that decision, there was discussion of a cooperative international environmental project between the United States, Russia and Norway to design, test, develop and manufacture new containers for spent naval fuel. In September 1996, U.S. Secretary of Defense Perry, Russia's Minister of Defense Igor Rodionov, and Norwegian Defense Minister Jorgen Kosmo, agreed to establish an Arctic Military Environmental Cooperation (AMEC) program with the objective of enhancing environmental security in the



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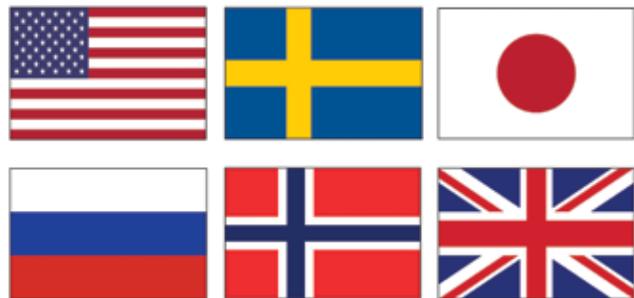
Spent nuclear fuel cask

region by developing specific projects to prevent pollution from radioactive and conventional sources.<sup>99</sup>

Norway is a small, but wealthy maritime nation. It engaged the Russian Navy, Ministry of Defense and regional governments, producing a series of bilateral agreements and projects. Norway funded construction of four additional special railcars for transporting spent naval fuel from arctic naval facilities to the Mayak reprocessing and storage plants.<sup>100</sup> Russian, Norwegian and American engineers worked together, designing and testing new containers, called casks, for storing spent fuel before it was transported to Mayak. Initial designs called for construction of 44-ton concrete storage casks capable of storing spent fuel and then serving as a container when the fuel was transported via rail to distant permanent storage facilities. When Russian officials certified the new casks as safe and secure, Commander Mark Baker awarded a contract to Sevsmash shipyard in November 2001 to build the first 25 spent nuclear fuel casks. At that time, the program projected contracting for 180 casks to store all excess spent naval fuel from 26 additional ballistic-

missile submarines projected to be eliminated in the next decade. The projected five-year cost for these spent naval fuel projects was \$86.3 million in FY 2001.<sup>101</sup>

While these casks would be used to store and transport spent naval fuel from strategic submarines, the design could also be used for spent fuel from any of the Russian Navy's decommissioned nuclear submarines. By the late 1990s the Russian Navy's Pacific and Northern Fleet had decommissioned 170 nuclear-powered submarines, five surface ships and eight icebreakers.<sup>102</sup> Norway, Japan, Sweden and Great Britain also worked with the Russian government on the broader range of problems associated with defueling and dismantling nuclear submarines and nuclear-powered vessels. While the international assistance efforts started before 1997, they accelerated thereafter, as nations developed a series of new cooperative agreements with Russia to lessen the environmental danger from decommissioned radioactive nuclear vessels rusting in arctic and pacific waters. The Arctic Military Environmental Cooperation program was very successful. It helped convince other nations the Russian Federation was serious about developing and implementing new joint projects. By the time of the G-8 meeting in Kananaskis, Canada in 2002, participating governments agreed that a major, multi-year effort was necessary to defuel and dismantle Russian nuclear-powered naval vessels and reactors safely and securely.<sup>103</sup>



Flags of the United States, Sweden, Japan, Russia, Norway and the United Kingdom

### Renewal of U.S.-Russian Federation CTR framework agreement

In the midst of the substantial expansion of SLBM and ICBM eliminations in Russia, the United States approached the Russian government in early 1999 about extending the CTR program's bilateral Strategic Offensive

Arms Elimination framework agreement for another seven years. Yeltsin's government refused, however, and suggested that it be renegotiated. Specifically they wanted to change those amendments that addressed tax exemptions, liability protections and the granting of special privileges and immunities to CTR officials, firms and individuals. These provisions had been in the original agreement, in part due to U.S. Congress insistence that none of the former Soviet Union states should be given assistance that could be subject to national taxation. Local and regional governments throughout Russia never liked the exemptions, but their grievances grew particularly acute following the financial collapse of August 1998. In the arctic regions where the naval shipyards were located, and in Mayak and in Shchuch'ye, the CTR program's direct contracts paid millions of dollars to shipyard enterprises and workers, but regional and local governments were not able to tax these contracts, or any equipment or services. In addition, by 1999 the Russian Duma had enacted a significant body of domestic laws and administrative regulations that granted the localities taxing powers. These new laws, which were not on the books in June 1992 when the original CTR framework agreement was signed, contained sections on liability laws and the right to sue for damages in case of accidents or incidents. Finally, the U.S. government had signed other CTR framework agreements in the 1990s, which did not have these objectionable provisions. A combination of these issues persuaded the Russian government not to sign the proposed seven-year extension, offering instead a series of major changes and key deletions in the agreement.<sup>104</sup>

An impasse developed. The U.S. rejected Russia's proposed changes and deletions. According to Susan Koch, a senior American defense official, the stalemate was broken when the Russian Ministries of Defense, Atomic Energy and Defense Industry formed a "stakeholders" coalition that was able to fashion a provisional solution.<sup>105</sup> These ministries and their key allies, the shipyard directors and military planners, argued the CTR program's financial commitments were so significant and that their continuance was critical to their enterprises and workers. They argued that the bilateral framework agreement should be renewed and extended provisionally.

Nonetheless, bickering among competing ministries in Moscow continued for months. In mid-May 1999, with American patience running out, General Kuenning, CTR

director, issued a contractually required 30-day shutdown notice to all American and Russian contractors, declaring all programs would shut down on June 16 if the extension was not signed. Shaken by the American ultimatum, the Russian Foreign Ministry, the powerful ministry that led the interagency group, came forth quickly with a solution. The Russian government would sign the CTR Framework Agreement extension provisionally. It would be provisional because some aspects of the agreement conflicted with domestic law; and the Russian Duma would have to pass new financial compensation provisions or even new laws resolving the conflicts.<sup>106</sup> U.S. State Department lawyers determined that once the CTR extension was signed by the two governments, the "national procedure" of the other signatory nation's legislative process would not delay implementation. The American Ambassador to Russia signed the CTR Framework Agreement Extension in Moscow on June 15, and the Russian Ambassador to the United States signed it in Washington the following morning.<sup>107</sup>

## Russian ICBM dismantlement: Defense ministries expand cooperation

When General Igor Sergeyev, commander of the Strategic Rocket Forces, reviewed the command's status in December 1996, it had 19 missile divisions and 756 operational ICBMs deployed.<sup>108</sup> Many of these deployed strategic missiles had already exceeded their service life, and he expected that a significant portion of them would be decommissioned and



General Igor Sergeyev

RIA Novosti

eliminated in the next decade under the pending START II Treaty. General Sergeyev supported the START I and START II treaties as a structured, verifiable way to reduce the United States and Russia’s strategic nuclear forces. He declared the Russian Strategic Rocket Forces had sent more than 2,500 warheads for dismantlement and had placed 22,000 tons of liquid rocket fuel in military storage depots. A new, modern ICBM, the Topol M (SS-27) would replace the old weapons. Three regiments of SS-27s had been activated and were on combat duty by late 1996. The general warned that if the nation’s financial problems continued, the Strategic Rocket Forces would face difficult decisions and further reductions.<sup>109</sup>

Three months later at the Helsinki Summit, Presidents Clinton and Yeltsin agreed to reduce their respective strategic nuclear forces in a two-stage process: first ratification of START II, then open, bilateral negotiations for a START III Treaty.<sup>110</sup> The American president pledged additional CTR funds to assist Russia in meeting START II compliance levels. The Russian president declared he would secure treaty

ratification by the Duma. Six months later, Secretary of State Madeline Albright and Foreign Minister Yevgeny Primakov exchanged letters legally codifying the two presidents’ Helsinki commitments to deactivate all American and Russian strategic nuclear delivery vehicles in START II by December 31, 2003.<sup>111</sup> These decisions laid the groundwork for a series of new cooperative assistance projects for decommissioning and dismantling excess strategic missiles and weapon systems.

The Russian Federation had inherited slightly more than 1,000 ICBMs in eight different types of missiles. In the field, these missiles could be launched from fixed silos, special military railroad trains or from road-mobile launch vehicles. In a war, they could launch nearly 3,600 warheads. When START I entered into force in December 1994, the Russian Ministry of Defense and General Staff implemented its weapon systems reduction programs to reduce its Strategic Rocket Forces to meet the final treaty compliance deadline of December 2001. By then, Russia, the United States, and

Table 8-3. Russian Federation ICBM Eliminations under the START I Treaty

ICBMs	USSR - September 1990		RUSSIA - January 1998	
	Missiles	Warheads	Missiles	Warheads
SS-11	326	326	0	0
SS-13	40	40	0	0
SS-17	47	188	0	0
SS-18	308	3,080	180	1,800
SS-19	300	1,800	188	1,128
SS-24 silo	56	560	56	560
SS-24 rail	33	330	36	360
SS-25 road	288	288	360	360
<b>Total</b>	<b>1,398</b>	<b>6,612</b>	<b>822</b>	<b>4,210</b>

Note: Ukraine inherited 130 SS-19s and 46 SS-24s; Kazakhstan had 104 SS-18s. These missiles were included in the USSR totals. Sources: START I Treaty, Memorandum of Understanding Data, and ACDA, January 1, 1998. See *Arms Control Reporter*, 1998, p 611. E-Russia-1.

the other nations had to reduce their strategic forces to levels at or below START treaty limits of 1,600 strategic nuclear delivery vehicles and 6,000 warheads. These treaty figures included ICBMs, SLBMs and strategic bombers. When the treaty's first three-year phase ended in December 1997, Russia reported its reductions to the five-nation Joint Compliance and Implementation Commission. Listed in the table below, reductions in the other Commonwealth of Independent States, specifically Ukraine, Belarus and Kazakhstan, are included under Russia's missile and warhead totals, as specified in the Lisbon Protocols to the START Treaty.

The SS-19 and SS-18 (2,820) warheads transferred from Kazakhstan and Ukraine to Russia made up the bulk of reported Russian warhead reductions between 1990 and 1997. Another 630 warheads were attributed to strategic missiles and bombers based in Russia. In its 1997 START Treaty report, Russia declared it had eliminated 326 SS-11s, 40 SS-13s, 47 SS-17s and 76 SS-18 missiles. To decommission and eliminate its missiles and bombers,

the Russian Ministries of Defense and Defense Industry developed a state program, starting in 1992-1993. They established the reduction schedule, financed the effort and ensured compliance with START Treaty elimination protocols. In the program, the Strategic Rocket Forces worked with Rosobshchemash (later Rosaviakosmos), a large MOD enterprise, to decommission operational regiments, remove warheads, remove missiles from silos and launch pads, and transport them to a rocket division's temporary storage facilities. The final stage required by the treaty was to detonate the missile silos and launch pads, and dismantle the mobile vehicles that served as launchers.

Initially, General Sergeyev ordered the decommissioning of older, single-warhead, fixed SS-11 and SS-13 missiles. The Russian Ministry of Defense turned these missiles and silos over to the Ministry of Defense Industry and the Rosobshchemash enterprise to defuel and eliminate, then destroy the reinforced launch pads in accordance with START.<sup>112</sup> By 1997, the Russians eliminated ICBMs and



Defense Threat Reduction Agency

CTR provided power saw dismantling missiles



SS-18 ICBM disassembly facility

silos at the six START-designated elimination facilities at Pibanshur, Uzshur, Sechuga, Surovatikha, Sergeiv Posad and Yedrovo.<sup>113</sup> The U.S. CTR program assisted the Russian defense ministries by providing lifting cranes, bulldozers, plasma cutters, grinders, power saws and other tools used to dismantle missiles and launch sites. This process was similar to another CTR project for eliminating strategic bombers. Other equipment was acquired in the United States, shipped to Moscow, and then transported to Engels Air Base where local Russian firms dismantled the Tu-95 heavy bombers. From 1994-1997, Russian workers dismantled 20 bombers following the elimination protocols in START I.<sup>114</sup> During the same period, the Russian Ministry of Defense Industry and Rosobshchemash contracted with local firms and other enterprises to defuel and eliminate 431 strategic missiles under provisions of the treaty. Destruction of launch silos proceeded more slowly, with 54 silos dismantled in 1997.<sup>115</sup>

### Russia opens the silo door: multiple, new CTR projects, 1997-2001

By 1997 General Sergeyev was one of the most respected military officers in Russia. President Yeltsin promoted him to the rank of marshal, and then selected him as defense minister. Marshal Sergeyev developed a new national military strategy that called for modernization of the strategic nuclear forces and compliance with reciprocal, verifiable strategic arms reduction treaties. He intended to eliminate excess obsolete missiles, submarines and bombers that fell under the arms control treaties and those weapons systems that no longer fit with the nation's war plans. These strategic weapons would

be eliminated with international assistance, predominantly from the established U.S. CTR program. In addition, Sergeyev strongly supported consolidation and modernization of Russia's military nuclear weapons complexes.

For American CTR officials that meant the silo door was opening. One important new project involved U.S. CTR assistance to eliminate SS-18 launchers. Under the signed, but not ratified START II Treaty, Russia declared it would eliminate all multiple warhead capable missiles. Accordingly, the General Staff and Ministry of Defense planned to eliminate 154 SS-18 strategic missiles and 16 launch control centers by December 2007. When the financially starved Russian Ministries of Defense and Defense Economy requested assistance, Roland Lajoie, Colonel Jim Reid and senior CTR policy officials reviewed the technical and financial requirements, and decided that the CTR program would fund elimination of these SS-18 missiles and silos. Because of the project's scope, they preferred to contract with an American firm to be the project's integrating contractor. The Russian General Staff, Ministry of Defense, Ministry of Defense Industry and Strategic Rocket Forces agreed with this approach. In 2000, Bechtel National became the U.S. integrating contractor and immediately began work in the SRF's rocket division located near Aleysk in the Urals. They subcontracted with Russian enterprises and began dismantling the massive SS-18 missiles, with concrete and reinforced steel silos, and the underground launch control centers.<sup>116</sup>

A separate U.S.-Russian CTR project addressed elimination of the SS-18 missiles. The Russian Strategic Rocket Forces established a neutralization and elimination facility at the Surovatikha Arsenal and was already processing the first of 104 SS-18 missiles shipped to Russia from Kazakhstan. The planned CTR project would deliver new equipment and structural improvements. In August 2000, Brown and Root Corporation became the U.S. integrating contractor, responsible for neutralization and elimination of SS-18 missiles at the renovated Surovatikha facility.<sup>117</sup> As part of the same project, Brown and Root renovated and equipped another existing Russian missile elimination facility in Piban'shur. Combined, the two missile elimination facilities would eliminate 206 SS-18s, 87 SS-17s and 73 SS-19 missiles by 2007.<sup>118</sup> All these SRF missiles were liquid-fueled rockets.

When the SS-17s, SS-18s and SS-19s were removed from their silos, they were defueled at the launch site. The toxic fuel was placed into tanker trucks and transported to the

missile division's storage facilities. Under CTR, American contractors assumed responsibility for planning and managing shipment of the estimated 169,000 tons of liquid rocket fuel via rail to a central elimination facility. The fuel came from storage areas in the missile divisions and seven Ministry of Defense fuel storage sites, located at Nizhnaya Salada, Mulyanka, Moshkovo, Rada, Turinskaya, Vanino and Latyshskaya. Because the volume was so great, CTR officials agreed to purchase and deliver 125 flatbed railcars, 670 intermodal containers and seven cranes for transporting the fuel to a central liquid propellant disposition facility in Krasnoyarsk that was still under construction.<sup>119</sup>

Russia's Strategic Rocket Forces also had three types of solid-fuel rockets: SS-24s, SS-25s and SS-N-20s. Although solid-fuel rockets were among some of Russia's most advanced systems, the SS-24 missiles, each capable of delivering 10 warheads, had been deployed on special military trains, which by the late 1990s were deemed inflexible and ill-suited for Russia's strategic forces in the future. There was also one regiment of SS-24s, with 10 missiles based in fixed silos at Teykovo. As a strategic rocket system, the SS-24 had many problems. Developed and fielded in 1988, the missile guidance system had a design life of only 11 years, which meant that by the end of the century, the weapons system would be technically unreliable and obsolete. Also,

critical replacement items and system parts were not readily available in Russia since both silo- and rail-based systems had been designed and manufactured in Ukraine.

Further, since 1994 the Strategic Rocket Forces, at the specific direction of President Yeltsin, had restricted that the SS-24 missiles, mounted on the special military trains, remain stationed in their rail garrisons. Located in garrisons in Kostroma, Bershet and Krasnoyarsk, these trains and missiles sat rusting away year after year.<sup>120</sup> Finally, the START II treaty, which the Russian government intended to implement if passed, required elimination of all multiple-warhead missiles such as the SS-24s. All these factors placed decommissioning and dismantlement of the SS-24 missile systems high on the Russians' list for elimination.

Another SRF solid-fuel rocket weapons system, the SS-25, consisted of a modern, fifth-generation, single-warhead missile mounted on a large military road vehicle and then deployed in large, restricted areas. The Strategic Rocket Forces fielded this missile system in very large numbers; there were 360 SS-25 missiles deployed operationally across Russia in 40 regiments. When operational, the missiles were driven through the vast Russia forests and steppe to designated launching points. The SS-25 mobile launcher systems had a measure of tactical mobility and a degree of invulnerability. The transporter-erector-launcher systems were costly to



Russian nuclear, chemical, and biological weapons sites

maintain and operate, however, because they required more manpower, constant maintenance and more support equipment than fixed-silo ICBM systems. In times of declining budgets, Marshal Sergeyev decided these SS-25 mobile missile systems could be decommissioned and eliminated since they were excess to the SRF's future force structure.<sup>121</sup> The SS-25s three-stage solid rocket motors were very reliable and could, if transferred, be used in Russia's space launch program.

Finally, the SS-N-20 solid-fuel missiles were submarine-launched ballistic missiles, which had been deployed on Russia's ballistic missile subs. Now they were judged excessive, and needed to be eliminated under provisions of START. In 1997 the Russian Ministry of Defense requested the United States provide CTR assistance in eliminating 51 SS-N-20 missile solid rocket motors and components.<sup>122</sup> U.S. officials agreed, accepting Russian recommendation to eliminate the rocket motors through an open burning process. In 1999, the Russian Ministry of Defense increased its request, adding 40 excess SS-N-20 solid rocket motors. This set the scope of the project at eliminating 91 SS-N-20 rocket motors.<sup>123</sup>

The Russian request for CTR assistance for the elimination of the SS-24 missiles and launchers was larger and more complex. To comply with the START I Treaty, Russian officials decided to eliminate 66 SS-24 missiles and 39 SS-24 missile launchers deployed on three special military trains.<sup>124</sup> Missiles and launchers would both be eliminated. In addition, Russian ministry officials requested the CTR program plan, finance and manage elimination of the three rail garrisons and dismantle 87 other vehicles associated with the weapon system. Elements of the weapon system, including the rail garrisons, were located at Bryansk, Perm, Bershet, Khrizolitovyy, Surovatikha, Kostroma and Krasnoyarsk.<sup>125</sup> In 1997, U.S. officials agreed that eliminating the SS-24 weapons system would be a CTR project and negotiations began on technical requirements for equipment, services, and process design. The design phase took several years.

Finally in 2001, the CTR project manager for SS-24 eliminations issued contracts to American firms to repair SS-24 railcars at the rail garrisons so they could be moved to the rail transfer facility at Bryansk. Under subsequent CTR



Defense Threat Reduction Agency

SS-25 ICBM launch canister



Defense Threat Reduction Agency

Elimination of SS-24 railmobile launchers

contracts, the SS-24 missiles on the launcher railcars were unloaded and transported to a missile disassembly facility in Perm. Finally, the rocket motors were sent to the renovated storage and elimination facility at Surovatikha. Additional contracts funded design of a new SS-24 rocket motor disassembly facility at Perm and dismantlement of the three rail garrisons.<sup>126</sup>

The Strategic Rocket Forces deployed 360 SS-25 missiles in 40 regiments. In 1997 Russian defense ministry officials requested the U.S. CTR program assist in eliminating the entire weapons system consisting of up to 400 SS-25 missiles, including missile spares, 360 mobile launchers and 1,600 support vehicles.<sup>127</sup> These SS-25s had been deployed across Russia, in nine missile divisions, with division headquarters, command posts and support units located at missile bases at Barnaul, Drovyanaya, Irkutsk, Kansk, Nizhniy Tagil, Novosibirsk, Teykovo, Yoskhar-Ola and Yurya. Since these were new missiles, launchers and support bases, and they constituted a formidable strategic rocket force, the rocket forces commanders planned to stretch the actual decommissioning of the SS-25 rocket divisions over many years. The schedule became the subject of extended negotiations when U.S. CTR officials decided to support Russia's request for assistance.

For Marshal Sergeyev and the Strategic Rocket Forces commander, the rate of decommissioning SS-25 regiments was tied to deployment and commissioning of new SS-27 regiments. If the rate of fielding new Topol-M SS-27 regiments slowed for technical or financial reasons, then slowing the decommissioning rate of operational SS-25 regiments would be a hedge against loss of strategic power.<sup>128</sup> For the American CTR officials, Kuenning and Reid, the flow of funds



Defense Threat Reduction Agency

CTR Director Thomas Kuenning

determined the project's schedule. They insisted that such a major commitment would obligate the program to provide multi-year commitments of funds to American integrating contractors directly, and to Russian subcontractors indirectly, to dismantle the hundreds of missiles and launchers in the field. It would require committing funds to design and construct new facilities to store the excess rocket motors and manage and contract for transport of the rocket motors and ancillary equipment via rail to a central elimination facility.<sup>129</sup> This uncertainty and facility modifications and new construction delayed actual elimination of the first regiment of SS-25s until 2003.

There was no uncertainty among American program managers and Russian officials, however, about the need for a new solid-fuel rocket disposition facility. The Strategic Rocket Forces had no facilities for disposing of the hundreds of SS-25 and SS-24 solid-fuel rocket motors. These were modern, fifth-generation strategic missile systems and the SRF had no plans or facilities for their destruction. Nikolai Shumkov, Deputy Director of the Ministry of Defense Industry estimated that more than 900 rocket motors, approximately 19,200 tons of rocket propellants, and up to 320 missile canisters required elimination and disposal.<sup>130</sup> U.S. CTR managers examined the requirement and agreed that eliminating the more than 900 solid-fuel rocket motors could be a major bottleneck if a new disposal facility was not ready when the missile divisions were decommissioned and missiles and launchers dismantled.

After technical negotiations, Russian and American officials decided the project's scope would include designing and constructing a new facility, and developing a process to eliminate solid propellants in at least 916 rocket motors and destroy up to 320 missile canisters. To plan and manage

such a large project, Kuenning decided to use an American integrating contractor to design, construct and equip a new centralized solid rocket elimination facility. In May 1997, Lockheed Martin Advance Environmental Systems won a \$54 million contract to design a new Solid Propellant Disposition Facility in the vicinity of Votkinsk.<sup>131</sup> The contract stipulated that the American contractor would train Russian workers in operation and maintenance of the elimination systems, and provide technical support through 2004. A Russian contractor would operate the facility under a separate CTR contract. After considerable technical negotiations and trials, the Russian ministries agreed the solid rocket motors would be eliminated using a low-pressure, contained burn system at the planned new facility.<sup>132</sup>

Thus, at the end of the 20<sup>th</sup> century profound changes were underway in the strategic relationship between the two nuclear superpowers. Russia began the transformation of its strategic nuclear forces and the shedding of excess and obsolete Soviet-era strategic missiles, submarines and bombers. The range of the projects was significant.<sup>133</sup>

- SS-18 launchers and silos in SRF rocket divisions (dismantle and eliminate)
- SS-18 dismantlement facility at Surovatikha (renovate, equip, operate)
- SS-17 and SS-19 dismantlement facility at Pibanshur (renovate, equip)
- Liquid Propellant Disposal Plant at Krasnoyarsk (design, construct, equip, operate)
- Liquid Propellant Oxidizer Conversion Systems (design, transport, equip, operate)
- Railcars and intermodal containers (acquire, deliver, and transport fuels)
- SS-20-N rocket motor destruction through open burning (design, equip, operate)
- SS-24 rail and silo systems elimination and destruction (design, equip, dismantle)
- SS-25 road mobile missile system elimination (design, equip, dismantle, eliminate)
- Solid Rocket Motor Disposal Facility at Votkinsk (design, construct, equip, operate)

For American CTR officials, like Ted Warner, Laura Holgate, Thomas Kuenning and Jim Reid, the scope of this engagement required developing trust and persistence in

working with General Sergeyev, Colonel General Igor Yakolev, Strategic Rocket Forces commander, N.I. Shumkov, Director, Ministry for Defense Industry, and many senior Russian military officers and project managers. It required working closely with U.S. integrating contractors, most of whom were major international corporations with experienced managers and staffs. On one level, the range of new projects was like a huge order book filled with future CTR work in Russia. On another, implementing all the projects successfully in a foreign nation – a former enemy – assumed American and Russian managers would be able to manage and control each project from design to completion.

That assumption was frequently challenged. Marshal Sergeyev, the defense ministry staffs and Russian generals and admirals controlled the number of missiles, submarines and bombers that would be eliminated. They determined the location, even the buildings, where elimination work would take place, and controlled access to these sites. They also controlled the timing for decommissioning the operational missile regiments and submarine units, setting the pace of eliminations. The Russian government used a Soviet-era command system that worked through complex bureaucratic managerial systems and sought to leverage authority of the Moscow-based defense ministries to match the requirements of operational and logistics commands in the field with services and products provided by large-scale defense enterprises and local firms. That system broke down frequently, especially when local military commanders, provincial officials and local bureaucrats asserted their authority. Systematic delays, bottlenecks and provincial roadblocks emerged. Consequently, while the number, scope and range of the planned new CTR projects was impressive, implementation would uncover many major, unanticipated difficulties.

### Turmoil within the Russian Ministry of Defense

These difficulties were minor when compared with the turmoil resulting from announcement of a major reorganization within the Russian armed forces and the national security apparatus. In 1998, Marshal Sergeyev announced a reorganization of the multiple commands and fleets in the Russian Armed Forces. There would be only three military services, along with a new strategic nuclear forces

command; the Strategic Deterrent Forces. That new command would unite the SRF's ICBM rocket forces, the Air Force's strategic heavy bombers and the Navy's ballistic-missile submarines, with the forces of the 12<sup>th</sup> Main Directorate. It would shift financial resources to modernization of the strategic nuclear forces. To lead the new combined nuclear forces, Marshal Sergeyev selected Colonel General Vladimir Yakolev. Once Sergeyev's new plan was announced, a fierce "roles and missions" power struggle ensued within the General Staff and Defense Ministry, which ended only with President Yeltsin's decision to reject the marshal's plan.<sup>134</sup>

Ironically, this rejection led directly to a loss of power for the Strategic Rocket Forces. In 1999, General Yakolev explained that the service's top priorities were completing the Topol- M program by deploying new mobile and fixed SS-27 missile systems and fulfilling a program to extend the service life of SS-18s, SS-19s and SS-24s.<sup>135</sup> Missile reductions would continue, but so would modernization. The following year, Yakolev announced the rocket forces would decommission approximately 250 strategic missiles in the next decade and convert many of these missiles into commercial space launch vehicles.<sup>136</sup> He also announced publicly that the rocket forces would release 10,000 servicemen the following year, and another 60,000 would be retired or discharged in the next five years.<sup>137</sup>

The Russian Security Council endorsed these strategic force reductions and linked the rate of missile reductions directly to force modernization, extension of the missiles' service life and to the U.S. remaining part of the ABM Treaty. Faced with such a bleak future, a significant number of SRF officers and warrant officers resigned from the service. In some missile divisions, such as at Droyanaya in the Chita Oblast, commanders were unable to pay the missile base's electric bill, causing intermittent power outages for thousands of military personnel and their families.<sup>138</sup> At another base, when the local electrical company cut off power for nonpayment, soldiers stormed the company's offices, taking plant personnel hostage and getting the power restored. Although this novel way of resolving overdue bills worked, these incidents caused alarm at Strategic Deterrent Forces headquarters and at the Ministry of Defense.<sup>139</sup>

If the Russian national security system was in turmoil during these years, the American-Russian security relationship was severely strained by NATO's war against Serbia over Kosovo in 1999, by the repeated failure of the Russian Duma

to ratify START II and by U.S. plans, to withdraw from the ABM Treaty. In the middle of this crisis, America and Russia elected new leaders. In late 1999, Russian President Yeltsin resigned and Vladimir Putin, a former KGB agent, became his successor. In the United States, George W. Bush narrowly defeated Albert Gore in the presidential election. Along with the new governments, the security consensus between the nations changed. To compound the situation, in early 2001, President Putin dismissed Marshal Sergeyev and named Sergei Ivanov, a former KGB colleague, as Minister of Defense.<sup>140</sup>

The new governments had different agendas. Even with the political shifts and the Defense Ministry's turmoil and disarray, American and Russian program managers were able to move ahead and implement cooperative reduction programs in the missile divisions, naval fleets and bomber commands. In April 2001, Senator Lugar recommended an agenda for American-Russian relations, one of "common security interests" in preventing proliferation of weapons of mass destruction. "In many ways," he said, "the [Nunn-Lugar CTR] program has represented the cornerstone and, at times, almost the totality, of the U.S.-Russian relationship. It has given expression to an area of cooperation where only competition might have existed, were it not for our common goal of dismantling the weapons of the Cold War."<sup>141</sup>

## Financing and managing the multiple CTR projects

Russian strategic offensive arms elimination projects required increased Congressional funding and intensified Defense Department and Ministry of Defense management. In 1997 Senator Lugar had persuaded Congress to increase CTR funding for ICBM and SLBM elimination projects by \$964 million over the next five years. Implementing multiple projects across Russia required more project managers and more comprehensive managerial systems. For the Russian government, managerial responsibility was fixed in the Ministry of Defense and Ministry for Defense Industry. Unlike the Ukrainian government, the Russian Ministry of Defense never empowered a senior general officer or a deputy minister of defense to be responsible for all missile, bomber and submarine dismantlement programs.<sup>142</sup> In the General Staff, Lieutenant General Lata, First Deputy Chief for Strategic Rocket Forces set up the Nuclear Hazard

Reduction Center, a special section to monitor all activities in the field and plan and coordinate an annual plan for decommissioning and dismantling strategic nuclear forces. The Ministry of Defense established a central planning section, as did the SRF, Navy, and Air Force. The Ministry of Defense developed a master plan, which the military forces coordinated and then followed. According to General Lata, "The annual plan is the current plan, but they also have long-term plans – for five years."<sup>143</sup>

The real work planning and managing missile eliminations was done by the Ministry for Defense Industry in Moscow. There, Nikolai Shumkov led a small staff of 20 to 30 planners and project managers. This ministry's principle agent in the field was the Rosobshchemash enterprise, the large Soviet-era bureau that had manufactured and installed strategic missiles at many of the SRF operational missile bases. The enterprise's directors and staffs functioned similarly to the American integrating contractors, organizing the dismantlement program, hiring local firms, planning weekly and daily work schedules, and coordinating major developments and progress with military commands and ministries. If there was a difference, it was that Russian enterprise managers in the field had greater authority and control. At the missile silo sites, enterprise managers worked with Ministry of Atomic Energy's technicians to remove warheads from missiles. As the numerous ICBM dismantlement and elimination projects developed after 1997, Rosobshchemash employed hundreds, if not thousands, of men across Russia. Many of them were former Strategic Rocket Forces officers and men.<sup>144</sup>

In 2002, Rosobshchemash received a CTR subcontract to decommission and dismantle the SRF's 59<sup>th</sup> Division, equipped with seven regiments of SS-18 missiles. The U.S. CTR program contracted with Bechtel, the American integrating contractor, to plan, manage and coordinate the project with the Russian subcontractors. Bechtel also provided U.S. delivered elimination equipment and supplies to the missile sites. However on these projects, the senior Russian project manager determined the schedule and, to a degree, the performance criteria, for ensuring that missile eliminations and silo dismantlement projects had been completed in accordance with the contract and the START I Treaty protocols. If differences arose, more often than not, Russian and American project managers discussed and resolved issues on-site. Major decisions involving contract modifications or new requirements had to be determined

by the American CTR project manager. As these projects unfolded, many American managers became acutely aware their Russian counterparts worked in a hierarchal bureaucratic system that did not share information across ministries or agencies.

By contrast, the American system of financing, monitoring, and managing these Russian ICBM projects was larger and more complex. It began with Congress. By the end of 2001, Congress had appropriated approximately \$3.9 billion for the CTR program.<sup>145</sup> These funds were provided to the Departments of Defense, Energy and State for execution. Defense Department officials signed the original U.S.-Russian CTR Framework Agreement in 1992 as the U.S. government's executive agent. In the next decade, department officials and Russian ministries negotiated 19 separate implementing agreements and memoranda of understanding. By the end of the decade, these bilateral programs with Russia, Ukraine and Kazakhstan were viewed by senior political and military leaders as a major success. In March 2000, General Henry H. Shelton, Chairman of the Joint Chiefs of Staff spoke for the military service chiefs and the Commander of U.S. Strategic Command when he wrote to Senator Lugar that the program's "visionary goal" of eliminating former Soviet threats "at the source" clearly served the most vital interests of the United States. "At a cost of less than two-tenths of one percent of the Defense budget," the general continued, "the CTR program provides enormous efficiencies." Shelton and Joint Chiefs of Staff strongly endorsed CTR and called on Congress to fund it fully.<sup>146</sup>

Within DOD, the Under Secretary of Defense for Policy was the primary official who developed the program's objectives, scope and direction. The Under Secretary of Defense for Acquisition, Technology, and Logistics had responsibility for implementing and managing the multinational program and projects. The CTR Program Office, led first by Roland Lajoie and then by Thomas E. Kuenning, Jr. developed annual and long-range program plans, managed all programs and projects and monitored all CTR activities with recipient nations.<sup>147</sup> In October 1998 a major DOD reorganization established a new agency, the Defense Threat Reduction Agency (DTRA) that incorporated the CTR Program Office into its organization as one of its core directorates.

From that point forward, DTRA's CTR directorate was the program's principal implementing organization, providing

program oversight, direct project management, acquisition and contract expertise, and financial management.<sup>148</sup> A small-business firm operated the Threat Reduction Support Center, providing administrative support, technical expertise and project continuity. From 1997-2001, there were more than 30 major CTR programs underway; each program manager had to answer for every aspect of the contract and specific project. By this time, Kuenning and the directorate's program managers were essentially running, with considerable oversight from the department's policy and professional staffs, the Defense Department's multi-faceted, multi-nation, multi-million dollar CTR effort.

From the beginning there was some suspicion, especially in Congress, that the international cooperative program's equipment, services and funds would not be used as intended by the Russian government or by any of the new states' governments. Congress insisted the Defense Department develop and institute a program of audits and examinations to inspect on-site all equipment, materials, training programs, and services provided to the recipient nations under bilateral CTR agreements.<sup>149</sup> By the end of 2001, there had been 112 audits and examinations; each inspection team issued a report that went to senior department officials and key Congressional committees.<sup>150</sup> Congress also used its investigative powers to commission the Government Accounting Office (GAO) to conduct research-based analytical investigations of CTR program management and implementation. The GAO conducted more than a dozen field-based investigations of every aspect of CTR assistance in Russia, and each one produced a formal report to Congress and the Secretary of Defense with specific recommendations.<sup>151</sup>

Far more important, however, than these congressional efforts at monitoring the CTR programs in Russia, Ukraine and Kazakhstan, was the direct managerial effort by American project managers who made frequent site visits to Russia. Project managers usually led small teams of technical advisors, linguists, acquisition specialists and logisticians to the project site where they would meet Russian and American project directors, and review every aspect of the project. In the 1990s and next decade, hundreds of American CTR officials traveled across the length and breadth of Russia. Traveling in small teams, they would fly from Moscow to local airports and then, accompanied by Russian officials, drive to Russian military bases and dismantlement, elimination



National Archives - Still Picture Branch

Jim Reid (l.)

or construction sites. On-site, they worked directly with American integrating contractors, Russian enterprise project managers, Russian subcontractors, and at times, local military and naval commanders. During 2001 alone, there were 169 CTR program management site visits to Russia, Ukraine and Kazakhstan.<sup>152</sup> In any given week there were 35 to 40 American CTR team members, traveling to Moscow and working with the special staff at the U.S. Embassy.<sup>153</sup>

In Russia, U.S. program managers controlled CTR assistance through the contracting process. Using Federal Acquisition Regulations (FAR) and DOD regulations, they negotiated, coordinated and signed acquisition contracts to carry out various CTR projects in Russia. At times they used direct contracts, as with the arctic and pacific naval shipyards. Other times, they contracted with Russian or foreign firms to build and deliver equipment such as railroad cars or special containers, but the preferred method of managing projects in Russia was by contracting with American corporations to work as an integrating contractor, as mandated by Congress. Although many Russian defense analysts complained about this policy, pointing out that it was extraordinarily expensive to pay U.S. firms to establish and maintain project managers and staffs at remote military sites and facilities, most American CTR program managers in the field thought the Congressional policy was correct.<sup>154</sup> Speaking to reporters in May 1999, Jim Reid stated that when the Russian Ministry of Economics requested CTR support dismantling SS-18 silo launchers, DOD officials decided to issue a competitive

## With Courage and Persistence

contract to an American firm. “That project,” Reid explained, “is going to require enough scheduling, oversight and management that it’s really beyond what our office can support directly.”<sup>155</sup> Luke Kluchko, another CTR official, addressed the issue of which American corporations got the major integrating contracts in Russia:

Essentially these were big U.S. firms that acted as our agent (CTR program) to do a particular job. Bechtel, Brown and Root, Morrison-Knudsen, Raytheon, they all had international operations.... They have worked in all kinds of environments. And because they are private industry, their people can act, can behave in a certain way that we cannot, because we are government people, and we have to follow certain procedures. We don’t have their maneuverability. ... There was also our comfort factor, because a lot of these programs were huge, complex, and very spread out.<sup>156</sup>

Assisting the Russian government in eliminating its excess ICBM forces, American integrating contractors managed the following projects:

### A New Initiative

Besides weapons eliminations in Russia, American integrating contractors also managed CTR projects to improve security at nuclear weapons storage areas. This included designing and delivering an inventory control and management system for storage of nuclear warheads. Other firms delivered equipment and training services for Russian guard forces, and still others acquired new security equipment for nuclear weapons storage sites and provided site assessments, training and logistics. American integrating contractors also managed projects providing improved security for transportation of nuclear weapons, constructed a large new secure fissile materials storage facility, designed and constructed a new chemical weapons destruction facility, and even designed and managed a biological weapons proliferation prevention program across the region.

After 2000, when the number of CTR projects and contracts grew dramatically, Ann Bridges-Steely, DTRA’s Director of Acquisitions and Logistics recommended a new contracting procedure. In the new approach, the implementing agency,

DTRA would use a multiple award, indefinite delivery/indefinite quantity contract that would cover the entire CTR mission for the next five years. At \$5 billion, this contract award would be the largest in the agency’s short history.

**Table 8-4. U.S. Integrating Contractors for ICBM Projects in Russia, 1997-2003**

Project	U.S. Contractor	Year Initiated
SS-18 silo dismantlement	Brown and Root	2000
SS-18 Neutralization/ Elimination Facility at Surovatikha	Brown and Root	2000
SS-17/SS-19 Neutralization/ Elimination Facility at Piban’shur	Raytheon Technical Services Corporation	2003
Liquid Rocket Fuel Conversion Plant at Krasnoyarsk	Thiokol	1995
Oxidizer Liquid Rocket Fuel Conversion Systems	Bechtel National Inc.	1999
Solid Fuel Disposition Facility at Votkinsk	Lockheed Martin	1998
Solid Propellant ICBM/SLBM and Mobile Launcher Elimination	Washington Group International	2003
SLBM SS-N-20 Rocket Motors	Parsons-Delaware	2003
CTR Logistics in Russia	Raytheon Technical Services Corporation	1995

*Source: DOD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress FY 2003, data as of January 2002.*

John Connell and Herbert Thompson, two experienced CTR managers, led the contract definition and selection process. Following legal notifications on the Commerce Business Daily (now FedBizOps) in November 2000, the agency set up a special website, communicated electronically with potential contractors and conducted a one-day briefing, which was attended by 120 firms. "Because of the dollar value of the contract," Thompson explained, "senior decision makers in the agency were involved in all stages of the process."<sup>157</sup>

When bids came in, Connell and Thompson set up a source-selection evaluation board with teams to evaluate technical proposals, conduct performance risk assessments and examine cost issues. Following reviews and approvals by senior legal, acquisition and management officials, the CTR Integrating Contract (CTRIC) was awarded in September 2001. Parsons Delaware, Bechtel National, Washington Group International, Raytheon Technical Services Company, and Brown and Root Services shared the contract award. The five corporations constituted a pool of firms with international experience. Each of the firms had managed and planned previous CTR projects in Russia,

Ukraine or Kazakhstan. All had worked with foreign governments, and national and local enterprises. With the new contract in effect, CTR program managers anticipated they would be able to define and award a contract within 55 to 80 days, instead of 9 to 12 months under the old system.<sup>158</sup> With award of this major contract in September 2001, the Cooperative Threat Reduction program approached a series of major benchmarks.

### **START I Treaty compliance, CTR program at ten years, and the Bush administration's CTR program review and revalidation**

On December 5, 2001, the five START I Treaty nations – the United States, Russia, Ukraine, Kazakhstan and Belarus – had to declare they were in compliance with final force levels required by the treaty. All were. That date also marked the 10<sup>th</sup> year of the Nunn-Lugar CTR Program. By this time, the program's premier objective was to "Assist Russia in accelerating strategic arms reductions to the Strategic Arms

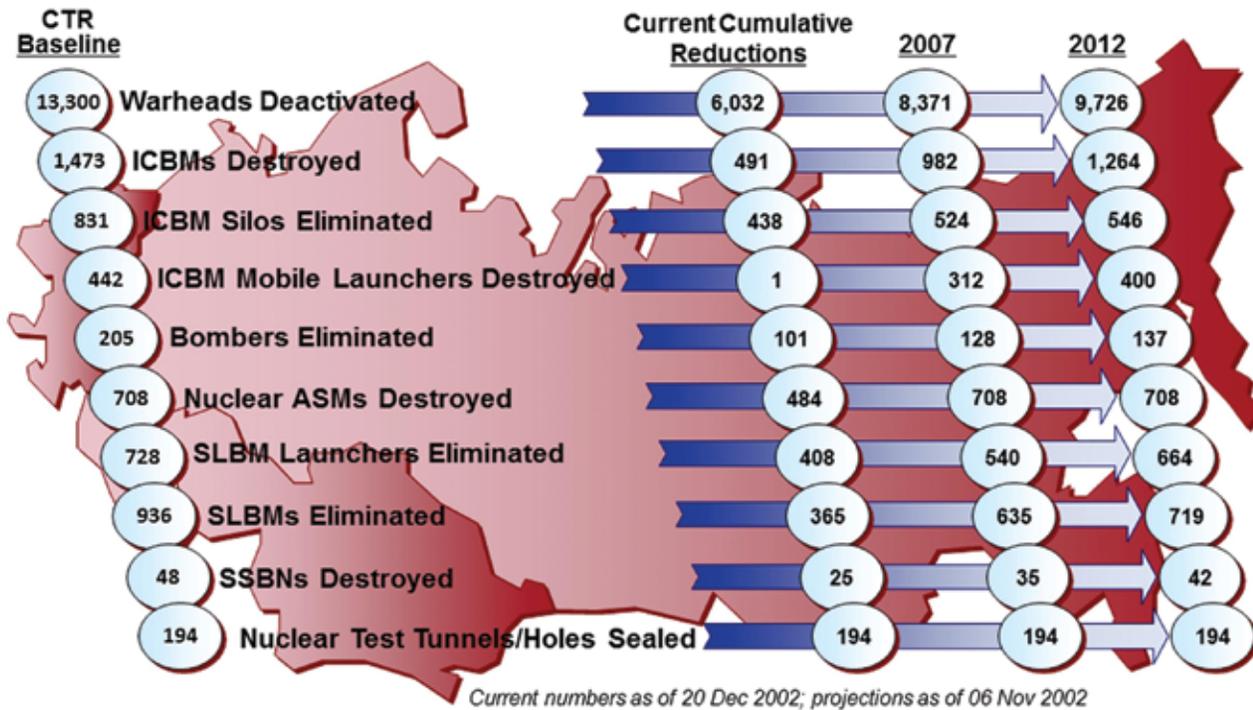


George W. Bush Presidential Library

Russian President Vladimir V. Putin and U.S. President George W. Bush at Crawford, Texas, November 2001

## CTR Scorecard Ukraine, Kazakhstan, & Belarus are Nuclear Weapons Free

Defense Threat Reduction Agency



2002 CTR Scorecard

Reduction Treaty levels.” There was no doubt the Nunn-Lugar CTR programs helped Russia meet its treaty compliance levels. This conclusion, acknowledged by Russian defense officials and general officers, was particularly accurate in reduction and elimination of the Russian Navy’s ballistic-missile nuclear submarines.<sup>159</sup> That same month, President

warheads.<sup>160</sup> During their discussions, Bush and Putin focused on the threat of international terrorism and the recent terrorist attacks on the World Trade Center and the Pentagon. They talked about new joint cooperative programs on the physical protections required for Russia’s nuclear storage sites and new programs to assist with accounting for nuclear weapons in storage. They also touched on new efforts to provide equipment and training for the Russian government to use in resisting terrorist attacks.

### New CTR Contract

- ★ Multiple Award, Indefinite Delivery /Indefinite Quantity

Bush announced his administration had completed a comprehensive review of nonproliferation programs and threat reduction assistance to the Russian Federation.

In November 2001, Bush had hosted Putin at his Texas ranch, and they pledged to make further reductions in strategic offensive weapons and deployed strategic

Finally, the two heads of state reviewed plans to accelerate reductions in chemical weapons stockpiles, and new efforts to monitor and secure biological technologies.<sup>161</sup> “Together, we must keep the world’s most dangerous technologies out of the hands of the world’s most dangerous people,” Bush declared three weeks later in a speech at The Citadel, The Military College of South Carolina. “The President has made it clear repeatedly,” White House officials announced in late December, “that his administration is committed to strong, effective cooperation with Russia ... to reduce weapons of mass destruction and to prevent their proliferation.”<sup>162</sup> For

the Bush administration, stemming international terrorism became a new foreign policy objective.

Four areas were identified for expansion: securing and consolidating Russia's weapons-grade nuclear materials, providing assistance for the storage and transparency of fissile materials and warheads; accelerating construction of a chemical weapons destruction facility at Shchuch'ye and planning new programs that would engage and redirect the work of Russia's and the other new nations' biotechnical institutes and scientists. Clearly, these new areas reflected the Bush administration's policy of redirecting CTR programs toward assisting Russia to secure its nuclear materials, chemical arsenals, and biological weapons scientists and technologies from terrorists.

To measure these major benchmarks, the table below compares the START Treaty's starting, mid-point, and final reduction levels. The treaty began as a bilateral U.S.-USSR treaty when Presidents Gorbachev and Bush signed it in Moscow in July 1991. A year later in Lisbon, it became a five-nation treaty. When all five nations completed ratification by December 1994, the treaty entered into force. In Lisbon, the United States agreed to include strategic-weapons reductions in Kazakhstan and Ukraine with Russia's reduction figures. Finally by December 2001 all five nations reported to the treaty's commission that they were in compliance with the treaty's final reduction levels. All reductions were verified by on-site inspections. The START Treaty levels for strategic bombers, submarines and missiles were:

Table 8.5-. START I Treaty, 1990-2001

**Category 1. Strategic Nuclear Delivery Vehicles – ICBMs, SLBMs, and Bombers**

	1991 (Signature)	1994 (Entry into Force)	Jan 1998 (+3 years)	2001 (7 year goal)
United States	2,246	1,838	1,485	1,600
Former USSR	2,498	1,956	1,594	1,600
Russia		1,596	1,484	
Ukraine		196	110	
Kazakhstan		104		
Belarus		36		

**Category 2. Strategic Warheads (Attributed)**

	1991 (Signature)	1994 (Entry into Force)	Jan 1998 (+3 years)	2001 (7 year goal)
United States	11,796	8,824	7,989	6,000
Former USSR	10,271	9,568	7,612	6,000
Russia		6,914	6,680	
Ukraine		1,438	932	
Kazakhstan		1,040		
Belarus		36		

Sources: Annex A, B, C of Start Treaty MOU, 31 July 1991, Start MOU, January 1995, Start MOU, January 1998, and December 2001.

Another way to measure assistance to Russia and the other nations was to examine the scope of CTR programs against a benchmark of requested assistance in a series of strategic offensive weapons and systems categories. The Department of Defense developed a single chart, known as the "Scorecard" (p. 256) for measuring its current and projected status for ten major CTR programs against a baseline of requested assistance. The Scorecard for 2002 revealed significant reductions in ICBMs, ICBM silos, strategic bombers, air-launched cruise missiles, SLBM launchers, submarine-launched ballistic missiles, ballistic-missile submarines, and sealed nuclear testing tunnels.

## Endnotes

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<sup>1</sup> Within the Defense Department CTR program officers were located in four offices: OSD International Security Policy, OSD Atomic Energy, the CTR Program Office, and the Defense Nuclear Agency. In addition, there were people located in the Threat Reduction Support Center (TRSC), working under CTR support contract.

<sup>2</sup> Interview, Dr. Harold P. Smith, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs, 1993-1998, with Joseph P. Harahan, DTRA, Washington, D.C., 14 December 2001; Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Assistant to the Secretary of Defense for Cooperative Threat Reduction, 1994-1997, with Joseph P. Harahan, DTRA, West Wilton, New Hampshire, 31 March 2004. For the increase in CTR obligation rate see, Jason D. Ellis, *Defense By Other Means*, pp. 121-122.

<sup>3</sup> Presidential Directive-41, "U.S. Policy on Improving Nuclear Material Security in Russia and the Other Newly Independent States," September 1995 transferred nine programs from defense to other departments. For the context and controversy surrounding this directive see Ellis, *Defense By Other Means*, pp. 122-124.

<sup>4</sup> Carter articulated this position strongly: "When the White House attempted to give technical and programmatic guidance the effect was to hinder the implementation of Nunn-Lugar." Interview cited in Ellis, *Defense By Other Means*, p. 124.

<sup>5</sup> Rose Gottemoeller, "Presidential Priorities in Nuclear Policy, in Shields and Potter, editors, *Dismantling the Cold War*, 68; Interview, Ambassador James Goodby, U.S. Ambassador for the Safe, Secure, and Dismantlement Talks, 1993-1994, with Joseph P. Harahan, DTRA, Washington, D.C., 14 March 2005.

<sup>6</sup> See Ellis, *Defense By Other Means*, pp. 122-124.

<sup>7</sup> Ellis, *Defense By Other Means*, pp. 8-10.

<sup>8</sup> Interview, Ms. Laura S. Holgate, OSD Special Coordinator for Cooperative Threat Reduction, with Joseph P. Harahan, Historian DTRA, Washington, D.C., 20 June 2002.

<sup>9</sup> See, Department of Defense, FY1997 Semiannual Report to Congress, "Cooperative Threat Reduction (CTR) Program," March 31, 1997. These departmental objectives remained fixed for the next five years, except for some minor changes. The point is that the program objectives gave CTR a more rational approach to developing and managing the projects and programs.

<sup>10</sup> Interview with Major General (Retired) Vasily F. Lata, Director, Strategic Plans, Strategic Rocket Forces, General Staff, Russian Federation, with Joseph P. Harahan, Moscow, Russia, 25 January 2005.

<sup>11</sup> Ibid.

<sup>12</sup> For background and context see Goldgeier and McFaul, *Power and Purpose: U.S. Policy Toward Russia after the Cold War*, pp. 206-210; Strobe Talbot, *The Russia Hand: A Memoir of Presidential Diplomacy*, pp. 238-250. Talbot, who was present in every discussion, is especially revealing on Yeltsin's dilemma; For an array of the newsworthy issues at the summit, see Thomas W. Lippman, "Clinton, Yeltsin Agree on Arms Cuts and NATO," *Washington Post*, 22 March 1997.

<sup>13</sup> "The Paris Club is an informal group of official creditors whose role is to find coordinated and sustainable solutions to the payment difficulties experienced by debtor countries. As debtor countries undertake reforms to stabilize and restore their macroeconomic and financial situation, Paris Club creditors provide an appropriate debt treatment. Paris Club creditors provide debt treatments to debtor countries in the form of rescheduling, which is debt relief by postponement or, in the case of concessional rescheduling, reduction in debt service obligations during a defined period (flow treatment) or as of a set date (stock treatment)." Quote from "About Us" on the Paris Club Website at <http://www.clubdeparis.org/en/> accessed on 14 November 2011.

<sup>14</sup> Russia-United States Joint Statement on Parameters on Future Reduction in Nuclear Forces, Helsinki, Finland, 21 March 1997, in Public Papers of the Presidents, William J. Clinton - 1997, Volume 1, (U.S. Government Printing Office via GPO Access), pp. 340-341; Russia-United States Joint Statement on Chemical Weapons, 21 March 1997, in *ibid*, pp. 342-343; Russia-United States Joint Statement on European Security, 21 March 1997, in *ibid*, pp. 343-344; Joint Statement on United States-Russia Economic Initiative, 21 March 1997, in *ibid.*, pp. 344-346 at <http://frwebgate.access.gpo.gov/cgi-bin/multidb.cgi> accessed on 29 November 2011.

<sup>15</sup> News Release, Office of the Secretary of Defense (Public Affairs), "Additional Funds Added to Cooperative Threat Reduction Program in Russia," 23 April 1997.

<sup>16</sup> GAO Report, "Weapons of Mass Destruction: Status of CTR Program," September 1996, GAO/NSIAD-96-222.

<sup>17</sup> Ibid., Interview, Ms. Laura S. Holgate, OSD Special Coordinator for Cooperative Threat Reduction, with Joseph P.

Harahan, Historian DTRA, Washington, D.C., 20 June 2002; and Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Assistant to the Secretary of Defense for Cooperative Threat Reduction, 1994-1997, with Joseph P. Harahan, Defense Threat Reduction Agency, West Wilton, New Hampshire, 31 March 2004.

<sup>18</sup> These new CTR projects are described in the 1998 CTR Implementation Plan to Congress. See DoD Report, CTR Program Office, "Cooperative Threat Reduction (CTR) Program, Second-Half FY 1998 Semiannual Report," 30 September 1998.

<sup>19</sup> Briefing, Major Ron Alberto, CTR Project Manager, CTR Directorate, DTRA, "SLBM Launcher/SSBN Elimination Project," July 1999.

<sup>20</sup> DoD Report, CTR Program Office, "Cooperative Threat Reduction (CTR) Program, Second-Half FY 1998 Semiannual Report," 30 September 1998.

<sup>21</sup> Interview, Nikolai I. Shumkov, Director (retired), Department of Missile Technologies, Federal Space Agency, and Director, Administration for Disposition of Weapons and Materiel, Ministry of Defense, Russian Federation with Joseph P. Harahan, DTRA, Moscow, 20 July 2005.

<sup>22</sup> *Arms Control Reporter*, 1996, p 614.B.76.

<sup>23</sup> Goldgeier and McFaul, *Power and Purpose, U.S. Toward Russia after the Cold War*, pp. 229-235.

<sup>24</sup> *Ibid.*, pp. 235-246.

<sup>25</sup> See Joseph Ellis, *Defense by Other Means*, pp. 190-192.

<sup>26</sup> Address Before a Joint Session of the Congress on the State of the Union, 19 January 1999, in *Public Papers of the Presidents, William J. Clinton – 1999, Volume 1*, (U.S. Government Printing Office via GPO Access), pp. 62-71 at <http://frwebgate1.access.gpo.gov/cgi-bin/TEXTgate.cgi?WAISdocID=IjqmgE/16/1/0&WAISSaction=retrieve> accessed on 29 November 2011.

<sup>27</sup> Report, Russian American Nuclear Security Advisory Council, "Russian Nuclear Security and the Clinton Administration's FY 2000 Expanded Threat Reduction Initiative: A Summary of Congressional Action," February 2002. See also, Ellis, *Defense by Other Means*, pp. 190-192.

<sup>28</sup> For instance see, Report, "FY2000 Congressional Action Related to Russian Nuclear Security Issues," RANSAC, June 21, 1999, [www.ransac.org/OfficialDocuments](http://www.ransac.org/OfficialDocuments). The funds for the Energy and State Department were in these department's annual appropriation bills as well as the Defense appropriations act. The latter act labeled the U.S.-Russian cooperative assistance program the CTR Program.

<sup>29</sup> Ellis, *Defense by Other Means*, pp. 84-88, 122-130.

<sup>30</sup> *Ibid.*, pp. 86-87.

<sup>31</sup> PBS News Hour, "AWOL Arsenal", Transcript with Jim Lehrer and Senator Richard G. Lugar, Robert Bell, and Jessica Stern, March 19, 1998, at [http://www.pbs.org/newshour/bb/military/jan-june98/nukes\\_3-19.html](http://www.pbs.org/newshour/bb/military/jan-june98/nukes_3-19.html) accessed on 29 November 2011.

<sup>32</sup> See Ellis, *Defense by Other Means*, pp. 178-179.

<sup>33</sup> Vice Admiral A.A. Sarkisov, Russian Academy of Sciences and Director, Russian Nuclear Safety Institute, IBREA, Report, Strategic Approaches in Solving Decommissioning problems of Retired

Russian Nuclear Fleet in the North-west Region, Moscow, Russia, 2004.

<sup>34</sup> START Treaty, 31 July 1991, see Annex A, B, C.

<sup>35</sup> Miasnikov, "Naval Strategic Nuclear Forces," in Podvig, editor, *Russian Strategic Nuclear Forces*, pp. 234- 337; see also A.A. Sarkisov, Director, Russian Nuclear Safety Institute, IBREA, Report, Strategic Approaches in Solving Decommissioning Problems of Retired Russian Nuclear Fleet in the North-west Region, Moscow, Russia, 2004.

<sup>36</sup> The most comprehensive account of the Russian Navy's strategic nuclear forces is by Eugene Miasnikov, "Naval Strategic Nuclear Forces," in Podvig, editor, *Russian Strategic Nuclear Forces*, pp. 234-337.

<sup>37</sup> Miasnikov, "Naval Strategic Nuclear Forces," in Podvig, editor, *Russian Strategic Nuclear Forces*, pp. 273- 279.

<sup>38</sup> *Ibid.*, pp. 234 -245.

<sup>39</sup> Dmitry Litovkin, "CTR and Nuclear-Powered Submarine Dismantlement in the Northern Fleet," in Ivan Sfranchuk, editor, Cooperative Threat Reduction Program: How Efficient, PIR Report, 2000, pp. 35-41; See also, Miasnikov, "Naval Strategic Nuclear Forces," in Podvig, *Russian Strategic Nuclear Forces*, pp. 235- 252; and Aleksandr Nikitin, Igor Kudrik, Thomas Nilsen, "The Russian Northern Fleet – Sources of Radioactive Contamination," Report, Bellona Foundation, 1996, at [http://www.bellona.org/reports/The\\_Russian\\_Northern\\_Fleet](http://www.bellona.org/reports/The_Russian_Northern_Fleet) accessed on 29 November 2011.

<sup>40</sup> Miasnikov, "Naval Strategic Nuclear Forces," in Podvig, ed. *Russian Strategic Nuclear Forces*, pp. 272-273; Nikitin, et. al., "The Russian Northern Fleet – Sources of Radioactive Contamination."

<sup>41</sup> Litovkin, "CTR and Nuclear-Powered Submarine Dismantlement in the Northern Fleet, in Sfranchuk, editor, Cooperative Threat Reduction Program: How Efficient, PIR Report, 2000, pp. 35-40; James Clay Moltz, "Russian Nuclear Submarine Dismantlement and the Naval Fuel Cycle," Special Report in *The Nonproliferation Review*, Spring 2000, pp. 76-87.

<sup>42</sup> Nikitin et. al., "The Russian Northern Fleet – Sources of Radioactive Contamination."

<sup>43</sup> *Ibid.*

<sup>44</sup> *Ibid.*, See also, Litovkin, "CTR and Nuclear-Powered Submarine Dismantlement in the Northern Fleet," in Sfranchuk, editor, Cooperative Threat Reduction Program: How Efficient, PIR Report, 2000, pp. 35-40.

<sup>45</sup> Miasnikov, "Naval Strategic Nuclear Forces," in Podvig, ed., *Russian Strategic Nuclear Forces*, pp.272-273.

<sup>46</sup> FY1994 National Defense Authorization Act, Public Law 103-160, 30 November 1993.

<sup>47</sup> Interview, Mr. Jim Reid, Director, Cooperation Threat Reduction Policy Office, Office of the Secretary of Defense, Department of Defense, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 1 May 2000. See also, Briefing, Major Ron Alberto, CTR Project Manager, CTR Directorate, DTRA, "SLBM Launcher/SSBN Elimination Project," July 1999.

<sup>48</sup> Agreement Between the Department of Defense of the United States of America and the Ministry of Economics of the Russian Federation Concerning Cooperation in the Elimination of Strategic

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Offensive Arms, dated 26 August 1993 and amended 3 April 1995, 19 June 1995, 27 May 1996, 11 April 1997, 11 February 1998, 9 June 1998, 16 August 1999 and 8 August 2000. (Basic SOAE Agreement)

<sup>49</sup> Briefing, CTR Program Office, DTRA, "Cooperative Threat Reduction (CTR) Program Review, 20 May 1997; See also, Litovkin, "CTR and Nuclear-Powered Submarine Dismantlement in the Northern Fleet, in Sfranchuk, editor, Cooperative Threat Reduction Program: How Efficient, PIR Report, 2000, pp. 35-40; J.C. Moltz, "Russian Nuclear Submarine Dismantlement and the Naval Fuel Cycle," *The Nonproliferation Review*, Spring 2000, pp. 76-87.

<sup>50</sup> Interview with the Commander-in-Chief of the Northern Fleet, Admiral Oleg Yerofeev, *Nezavisimaya Gazette*, 22 April 1995.

<sup>51</sup> For a more detailed account of the economic deterioration see Nikitin et. al., "The Russian Northern Fleet – Sources of Radioactive Contamination," section 1.3.

<sup>52</sup> Ibid.; See also Northern Fleet Press Release, 22 September 1995.

<sup>53</sup> Radio Murmansk, 27 September 1995.

<sup>54</sup> Interview with the Commander-in-Chief of the Northern Fleet, Admiral Oleg Yerofeev, *Nezavisimaya Gazette*, 22 April 1995.

<sup>55</sup> James Clay Moltz, "Russia: Naval Fuel Cycle: Foreign Assistance," in Nuclear Threat Initiative, Research Library, April 1998, at <http://www.nti.org/db/nisprofs/russia/naval/forasst/forasovr.htm> accessed on 29 November 2011. See also, James Clay Moltz, "Russian Nuclear Submarine Dismantlement and the Naval Fuel Cycle," *The Nonproliferation Review*, Spring 2000, pp. 76-87; Nikitin et. al., "The Russian Northern Fleet – Sources of Radioactive Contamination."

<sup>56</sup> The Arctic Military Environmental Cooperation (AMEC) was established in 1995 as a cooperative multinational group between Norway, Great Britain, Russia, and the United States. For the group's reports and website see <http://www.denix.osd.mil/international/InternationalCooperation/EUCOM/AMEC.cfm> accessed on 29 November 2011. For perspective on the group's activities regarding the removal of spent nuclear wastes from Russian naval shipyards, see *The Arctic Military Environmental Cooperation (AMEC) Program's Role in the Management of Spent Fuel from Decommissioned Nuclear Submarines*, (NATO Science Series, 2006).

<sup>57</sup> Interview, Nikolai I. Shumkov, Director (retired), Department of Missile Technologies, Federal Space Agency, and Director, Administration for Disposition of Weapons and Materiel, Ministry of Defense, Russian Federation with Joseph P. Harahan, DTRA, Moscow, 20 July 2005.

<sup>58</sup> Ibid.; and Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Assistant to the Secretary of Defense for Cooperative Threat Reduction, 1994-1997, with Joseph P. Harahan, Defense Threat Reduction Agency, West Wilton, New Hampshire, 31 March 2004.

<sup>59</sup> Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Assistant to the Secretary of Defense for Cooperative Threat Reduction, 1994-1997, with Joseph P. Harahan, Defense Threat Reduction Agency, West Wilton, New Hampshire, 31 March 2004.

<sup>60</sup> Memorandum for Correspondents, Secretary of Defense Perry's Visit to Russia," 10 October 1996, at <http://www.fas.org/nuke/control/ctr/news/96-10-10.html> accessed on 29 November 2011.

<sup>61</sup> Briefing, CTR Policy Office, DoD, "Cooperative Threat Reduction (CTR) Program Review," 20 May 1997.

<sup>62</sup> Interview, Edward P. Baal, Deputy Director of Production, Zvezdochka Enterprise, with Joseph P. Harahan, Historian, DTRA, 28 January 2005, Archangelsk, Russia.

<sup>63</sup> Briefing, Major Ron Alberto, CTR Project Manager, CTR Directorate, DTRA, "SLBM Launcher/SSBN Elimination Project," July 1999; Interview, Lt. Colonel Ronald Alberto, U.S. Army, International Program Manager, SSBN Dismantlement Program, CTR Directorate, Defense Threat Reduction Agency, with Joseph P. Harahan, Historian, DTRA, 14 October 2004, National Defense University, Washington, D.C.

<sup>64</sup> Interview, Major General Thomas E. Kuenning, Jr., Director CTR Directorate (1998-2003), DTRA, with Joseph P. Harahan, DTRA, Washington, D.C., 6 August 2004.

<sup>65</sup> Fact Sheet, SLBM Launcher/SSBN Elimination, CTR Directorate, DTRA, 14 July 1999.

<sup>66</sup> Fact Sheet, CTR Directorate, SOAE Program, DTRA, "SLBM Launcher/SSBN Elimination (R)," 8 October 1999.

<sup>67</sup> Ibid.

<sup>68</sup> Ibid.

<sup>69</sup> Interview, Lt. Colonel Ronald Alberto, U.S. Army, International Program Manager, SSBN Dismantlement Program, CTR Directorate, Defense Threat Reduction Agency, with Joseph P. Harahan, Historian, DTRA, 14 October 2004, National Defense University, Washington, D.C.

<sup>70</sup> Fact Sheet, CTR Directorate, SOAE Program, DTRA, "SWLBM Launcher/SSBN Elimination (R)," 8 October 1999.

<sup>71</sup> Interview, Edward P. Baal, Deputy Director of Production, Zvezdochka Enterprise, with Joseph P. Harahan, Historian, DTRA, 28 January 2005, Archangelsk, Russia.

<sup>72</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress FY 2002, III-7.

<sup>73</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress, FY 2003 (Data, January 2002).

<sup>74</sup> Briefing, Commander Mark A. Baker, U.S. Navy, Program Manager, CTR Directorate, DTRA, "CTR Program SSBN Dismantlement Project," 5 December 2000.

<sup>75</sup> DoD Report, CTR Policy Office, Cooperation Threat Reduction Multi-year Program Plan, FY 2001, January 2000, pp. 15-16.

<sup>76</sup> Briefing, Commander Mark A. Baker, U.S. Navy, Program Manager, CTR Directorate, DTRA, "CTR Program SSBN Dismantlement Project," 5 December 2000.

<sup>77</sup> CTR Directorate, DTRA, "CTR Scorecard," 15 July 1999, and DoD Report, CTR Program Office, Cooperative Threat Reduction Annual Report to Congress FY 2003, January 2002.

<sup>78</sup> DoD Report, CTR Policy Office, Cooperation Threat Reduction Multi-Year Program Plan, FY 2001, January 2000, pp. 15-16.

<sup>79</sup> Briefing, Commander Baker, U.S. Navy, Program Manager, CTR Directorate, DTRA, "CTR Program SSBN Dismantlement Project," 5 December 2000.

<sup>80</sup> Department of Defense, Office of the Inspector General, Report, "Cooperative Threat Reduction Program Liquid Propellant Disposition," 30 September 2002, p. 3.

<sup>81</sup> Ibid.

<sup>82</sup> Ibid.

<sup>83</sup> DoD Report, CTR Policy Office, "Cooperation Threat Reduction Multi-Year Program Plan, FY 2001," (Data as of January 2000).

<sup>84</sup> DoD Report, CTR Policy Office, "Cooperative Threat Reduction Annual Report to Congress, FY2003 (Data as of January 2002).

<sup>85</sup> . Briefing, Commander Mark A. Baker, U.S. Navy, "CTR Program SSBN Dismantlement Project," to Director, CTR Directorate, DTRA, 17 July 2002.

<sup>86</sup> DoD Report, CTR Policy Office, "Cooperative Threat Reduction Annual Report to Congress, FY 2002 (Data, January 2001); Briefing, Commander Mark A. Baker, U.S. Navy, "CTR Program SSBN Dismantlement Project," to Director, CTR Directorate, DTRA, 17 July 2002; Interview, Edward P. Baal, Deputy Director of production, Zvezdochka Enterprise, with Joseph P. Harahan, Historian, DTRA, January 28, 2005, Archangelsk, Russia.; Interview Alexi Dynaev, Construction Manager, Zvezdochka Shipyard Enterprise, with Joseph P. Harahan, Historian, DTRA, 28 January 2005, Archangelsk, Russia

<sup>87</sup> DTRA, "Milestone Reached in Opening of Low Level Radiation Waste facility," *DTRA Connection*, vol 2. no. 11, November 2000, pp. 1, 4., see also, *Reuters*, "U.S. Cash Helps Russia Nuclear Shipyard Limp On," Severodvinsk, Russia, 22 October 2000.

<sup>88</sup> See "Russia: Northern Fleet," Nuclear Threat Initiative, Russia, at <http://www.nti.org/db/nisprofs/russia/naval/nucflt/norflt/norflor.htm> accessed on 29 November 2011.

<sup>89</sup> Toshiyuki Kawakami, Secretary General of the Japan-Russian Committee for Cooperating on Reducing Nuclear Weapons, "Issues of non-Ecological Safety of Complex Decommissioning of Nuclear Submarines in the Far East Region of the Russian Federation," speech to the FEES 2000 International Seminar, Moscow, Russia, 19 July 2000.

<sup>90</sup> Ibid. See also, James Clay Moltz, "Russia: Naval Fuel Cycle Foreign Assistance."

<sup>91</sup> James Clay Moltz, "Russia: Naval Fuel Cycle Foreign Assistance."

<sup>92</sup> James Clay Moltz, "Russian Nuclear Submarine Dismantlement and the Naval Fuel Cycle," *The Nonproliferation Review*, Spring 2000, pp. 76-87.

<sup>93</sup> Ibid, p. 79. On this point, Moltz interviewed Lt. Colonel Alberto.

<sup>94</sup> Christina Chuen and James Clay Moltz, Issue Brief, "Nuclear Submarine Dismantlement," July 2002, Nuclear Threat Initiative, Research Library, at [http://www.nti.org/e\\_research/e3\\_05.html](http://www.nti.org/e_research/e3_05.html) accessed on 30 November 2011.

<sup>95</sup> Briefing, Commander Mark A. Baker, U.S. Navy, Program Manager, CTR Directorate, DTRA, "CTR Program SSBN Dismantlement Project," 5 December 2000.

<sup>96</sup> Agreement Between the Department of Defense of the United States of America and the Ministry of Economics of the Russian Federation Concerning Cooperation in the Elimination of Strategic Offensive Arms, dated 26 August 1993 and amended 3 April 1995, 19 June 1995, 27 May 1996, 11 April 1997, 11 February 1998, 9 June 1998, 16 August 1999 and 8 August 2000, 9 June 2003, 25 September 2003, and 14 January 2005, and as amended and extended 30 August 2002. (SOAE Implementing Agreement, with amendments)

<sup>97</sup> Colonel Jim Reid, Deputy Director, CTR Directorate, DTRA, "On Spent Fuel Reprocessing....," *Nuclear Weapons and Materials Monitor*, 24 May 1999, pp. 12-18.

<sup>98</sup> Briefing, Commander Baker, U.S. Navy, Program Manager, CTR Directorate, DTRA, "CTR Program SSBN Dismantlement Project," 17 July 2002; See also, DoD Report, CTR Program Office, Cooperative Threat Reduction Annual Report to Congress, FY2003 (as of January 2002).

<sup>99</sup> Igor Kudrik, "Follow-up of the AMEC declaration," 11/06-1997, Bellona Foundation, at [http://www.bellona.org/english\\_import\\_area/international/russia/navy/co-operation/7618](http://www.bellona.org/english_import_area/international/russia/navy/co-operation/7618) accessed on 29 November 2011; Igor Kudrik, "Norway's contribution to nuclear safety in Russia," 17/06-1997, Bellona Foundation, at [http://www.bellona.org/english\\_import\\_area/international/russia/navy/co-operation/9293](http://www.bellona.org/english_import_area/international/russia/navy/co-operation/9293) accessed on 29 November 2011; see also, Report, Nuclear Threat Initiative, Russia: International Assistance Programs: Norway, 26 June 2007, at <http://www.nti.org/db/nisprofs/russia/forasst/intnatl/norway.htm> accessed on 29 November 2011.

<sup>100</sup> Igor Kudrik, "Follow-up of the AMEC Declaration."

<sup>101</sup> Briefing, Commander Baker, U.S. Navy, "CTR Program SSBN Dismantlement Project," 17 July 2002; See also, DoD Report, CTR Program Office, Cooperative Threat Reduction Annual Report to Congress, FY2003 (data as of January 2002).

<sup>102</sup> Report, National Research Council and Russian Academy of Sciences, Strengthening U.S.-Russian Cooperation in Nuclear Nonproliferation, Recommendations for Action, Washington, 2005, pp. 65-68.

<sup>103</sup> Statement of G-8 leaders, "The Global Partnership Against the Spread of Weapons and materials of Mass Destruction," Kananaskis, Canada, 27 June 2002; See also, Vladimir Orlov, *Guidebook: Global Partnership Against the Spread of Weapons of Mass Destruction*, PIR Center, Moscow, 2006, pp. 25-43. The G-8 commitments led to the development of a strategic master plan, see, Vice Admiral A.A. Sarkisov, Russian Academy of Sciences and Director, Russian Nuclear Safety Institute, IBREA, *Report, Strategic Approaches in Solving Decommissioning problems of Retired Russian Nuclear Fleet in the North-west Region*, Moscow, Russia, 2004.

<sup>104</sup> Susan Koch, "Cooperative Threat Reduction Negotiations: Lessons Learned," published in Report, National Research Council and Russian Academy of Sciences, Strengthening U.S.-Russian

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Cooperation in Nuclear Nonproliferation, Recommendations for Action, Washington, 2005, pp. 42-46.

<sup>105</sup> Ibid, pp. 44-45.

<sup>106</sup> See Valery Semin, Department of Security and Disarmament Affairs, Minister of Foreign Affairs, Russian Federation, "CTR has Potential for Further Development," in Ivan Safranchuk, Editor, *Cooperative Threat Reduction Program: How Efficient?*, pp. 9-12.

<sup>107</sup> Susan Koch, "CTR Negotiations: Lessons Learned," in Report, National Research Council and Russian Academy of Sciences, *Strengthening U.S.-Russian Cooperation in Nuclear Nonproliferation, Recommendations for Action*, Washington, 2005, pp. 42-46. For the DoD announcement see, "United States and Russian Extend Nunn-Lugar Cooperative Threat Reduction Agreement," June 24, 1999 at <http://www.nti.org/db/nisprofs/russia/forasst/ctr/programs.htm> accessed on 29 November 2011.

<sup>108</sup> "12/96: SRF Commander On START I Implementation," Russia: ICBM Deactivation and Dismantlement, Nuclear Threat Initiative, Russia, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/icbmdism.htm> accessed on 30 November 2011.

<sup>109</sup> "5/14/97: Lockheed Martin Awarded Contract to Dismantle Russian Ballistic Missiles," *ibid*.

<sup>110</sup> Joint Statements, Sixth Clinton-Yeltsin Summit, March 21, 1997. See also Steven Erlanger, "A Clinton- Yeltsin Sidelight: Progress on Arms Control," *New York Times*, 24 March 1997.

<sup>111</sup> "START II: Letters on Early Deactivation," 26 September 1997, at <http://nuclearfiles.org/menu/key-issues/nuclear-weapons/issues/arms-control-disarmament/us-russia.htm> accessed on 30 November 2011.

<sup>112</sup> Interview, Nikolai I. Shumkov, Director (retired), Department of Missile Technologies, Federal Space Agency, and Director, Administration for Disposition of Weapons and Materiel, Ministry of Defense, Russian Federation with Joseph P. Harahan, DTRA, Moscow, 20 July 2005.

<sup>113</sup> Interview, N. Shumkov, Director (retired), Department of Missile Technologies, with J. Harahan, DTRA, Moscow, 20 July 2005; Interview, Lieutenant General Vasily F. Lata, Director, Strategic Plans, SRF, Russia, with Joseph P. Harahan, DTRA, Moscow, 25 January 2005. See also, Ivan Safranchuk, "ESOA Program in Russia: Results and Problems of Implementation," in Safranchuk, *Cooperative Threat Reduction Program: How Efficient?*, pp. 24-34.

<sup>114</sup> Briefing, CTR Program Office, "Cooperative Threat Reduction (CTR) Program Review", 20 May 1997.

<sup>115</sup> Ibid.

<sup>116</sup> DTRA, CT Directorate, "Statement of Work for the Decommissioning of SS18 Silos at Aleysk," 29 April 2000. In the SOW, see Attachment 1. It describes the work to be accomplished by the principle Russian contractor, JSC Rosobshemash.

<sup>117</sup> Briefing, CT Directorate, DTRA, "Strategic Offensive Arms Elimination, Program Overview," February 2003.

<sup>118</sup> See DoD Report, CTR Policy Office, "Cooperative Threat Reduction Multi-Year Program Plan, FY 1999," February 1999. This report was the former semi-annual report to Congress.

<sup>119</sup> Report, CTR Directorate, DTRA, "Nunn-Lugar, Cooperative Threat Reduction Program: Russia," August 2000. As early as 1994, U.S. CTR policy officials had agreed to finance the project, and to employ an American contractor to construct and operate a liquid propellant disposition and conversion plant at Krasnoyarsk. In 1995, Thiokol-Honeywell Corporation became the integrating contractor responsible for developing the conversion process for eliminating the anticipated 33,000 tons of heptyl fuel. In 1999, Bechtel National was awarded the contract to design, fabricate, test, deliver, and operate two other systems which would convert the rocket fuel's oxidizer, approximately 135,000 tons, to nitric acid.

<sup>120</sup> See Federation of American Scientists, Fact Sheet, Weapons of Mass Destruction, "RT-23/SS-24 Scalpel," at <http://www.fas.org/nuke/guide/russia/icbm/rt-23.htm> accessed on 30 November 2011.

<sup>121</sup> See Michael Jasinski and Nikolai Sokov, "Russia: Strategic Rocket Forces Overview," Nuclear Threat Initiative, April 2001, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/srfovr.htm> accessed on 30 November 2011.

<sup>122</sup> Briefing, Commander Mark A. Baker, U.S. Navy, Program Manager, CTR Directorate, DTRA, "CTR Program SSBN Dismantlement Project," 5 Dec 2000.

<sup>123</sup> See DoD Report to Congress, CTR Policy Office, "Cooperative Threat Reduction Multi-Year Program Plan, FY 2000," February 1999.

<sup>124</sup> See DoD Report to Congress, CTR Policy Office, "Cooperative Threat Reduction Multi-Year Program Plan, FY 2001, data as of January 2000.

<sup>125</sup> DoD, CTR Directorate, "Russian Country Book: Program Briefing," 23 March 2005.

<sup>126</sup> Ibid.

<sup>127</sup> See DoD Report to Congress, CTR Policy Office, "Cooperative Threat Reduction Multi-Year Program Plan, FY 2000," February 1999; Report, CTR Directorate, DTRA, "Nunn-Lugar, Cooperative Threat Reduction Program: Russia," August 2000.

<sup>128</sup> Colonel General Yakolev, SRF Commander, Remarks, 17 December 1998 in *Krasnaya Zvezda*, cited in Russia: Archived ICBM Test Launch Developments, Nuclear Threat Initiative, Russia, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/icbmtest.htm> accessed on 30 November 2011. See also, article, Jasinski and Sokov, "Russia: Strategic Rocket Forces Overview," Nuclear Threat Initiative, April 2001, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/srfovr.htm> accessed on 30 November 2011. In 1999, the SRF projected 27 regiments of SS-27 Topol missiles.

<sup>129</sup> Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Assistant to the Secretary of Defense for Cooperative Threat Reduction, 1994-1997, with Joseph P. Harahan, DTRA, West Wilton, New Hampshire, 31 March 2004.

<sup>130</sup> Interview, Nikolai I. Shumkov, Director (retired), Department of Missile Technologies, Federal Space Agency, and Director, Administration for Disposition of Weapons and Materiel, Ministry of Defense, Russian Federation with Joseph P. Harahan, DTRA, Moscow, 20 July 2005.

<sup>131</sup> See DoD Report to Congress, CTR Policy Office, "Cooperative Threat Reduction Multi-Year Program Plan, FY 2000," February 1999.

<sup>132</sup> "Lockheed Martin Awarded Contract to Dismantle Russian Ballistic Missiles," 14 May 1997, Russia: ICBM Deactivation and Dismantlement, Nuclear Threat Initiative, Russia, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/icbmdism.htm> accessed on 30 November 2011.

<sup>133</sup> Report, CTR Directorate, DTRA, "Cooperative Threat Reduction Program: Russia," August 2001.

<sup>134</sup> Jasinski and Sokov, "Russia: Strategic Rocket Forces Overview," Nuclear Threat Initiative, April 2001, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/srfovr.htm> accessed on 30 November 2011.

<sup>135</sup> See "Russia: Archived ICBM Test Launch Developments," Nuclear Threat Initiative, Russia, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/icbmtest.htm> accessed on 30 November 2011.

<sup>136</sup> 10/31/2000: SRF Commander Recommends Converting Decommissioned ICBMS into Commercial Space Launch Vehicles," Nuclear Threat Initiative, Russia, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/icbmdism.htm> accessed on 30 November 2011.

<sup>137</sup> See Jasinski and Sokov, "Russia: Strategic Rocket Forces Overview," Nuclear Threat Initiative, April 2001, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/srfovr.htm> accessed on 30 November 2011.

<sup>138</sup> "2/5/2002: Drovyanaya SRF Base Suffers From Electricity Cuts," Russia: Archived ICBM Force/SRF General Developments, Nuclear Threat Initiative, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/icbmgen.htm> accessed on 30 November 2011.

<sup>139</sup> "9/12/2000: Unified Energy System Of Russia Shuts Off Power At SRF Facilities In Ivanovo Oblast, Raising Concerns About Safety," Russia: Archived ICBM Force/SRF General Developments, Nuclear Threat Initiative, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/icbmgen.htm> accessed on 30 November 2011.

<sup>140</sup> "Igor Sergeyev, 68, Ex-leader of Russian Defense Ministry, Dies," *New York Times*, November 11, 2006.

<sup>141</sup> Senator Richard G. Lugar, "Presentation, Eisenhower Institute Leadership Award", April 26, 2001, see <http://www.ransac.org/official>.

<sup>142</sup> See, Ivan Sfranchuk, "ESOA Program in Russia: Results and Problems of Implementation," in Safranchuk, *Cooperative Threat Reduction Program: How Efficient?*, pp. 26-27.

<sup>143</sup> Interview, Lt General (Retired) Vasily F. Lata, Director, Strategic Plans, Strategic Rocket Forces, Russia, with Joseph P. Harahan, DTRA, Moscow, 25 January 2005.

<sup>144</sup> The Russian system of missile dismantlement is described in Sfranchuk, "ESOA Program in Russia: Results and Problems of Implementation," in Safranchuk, *Cooperative Threat Reduction Program: How Efficient?*, pp. 26-34; See also, Interview, Nikolai I. Shumkov, Director (retired), Department of Missile Technologies, Federal Space Agency, and Director, Administration for Disposition

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<sup>145</sup> See DoD Report to Congress, CTR Policy Office, Annual Report to Congress Fiscal year 2003 (with data through January 2002). See Jason D. Ellis, *Defense By Other Means: the Politics of US-NIS Threat Reduction and Nuclear Security Cooperation*. This book is the best account of the U.S. Congress's role from 1991 through 1999; it covers well the congressional shifts in the multi-billion dollar program in the former Soviet Union.

<sup>146</sup> Letter, General Henry H. Shelton, Chairman of the Joint Chiefs of Staff, to U.S. Senator Richard G. Lugar, U.S. Senate, 31 March 2000.

<sup>147</sup> This roles and mission's description was included in every DoD CTR annual report to Congress. See DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress FY 2003, issued in January 2002, sections I, II, and III.

<sup>148</sup> Brigadier General Thomas E. Kuenning, Jr., "Guest Commentary: Cooperative Threat Reduction directorate," *DTRA Connection*, November 1999.

<sup>149</sup> Interview, Dr. Harold P. Smith, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs, 1993-1998, with Joseph P. Harahan, DTRA, Washington, D.C., 14 December 2001; Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Assistant to the Secretary of Defense for Cooperative Threat Reduction, 1994-1997, with Joseph P. Harahan, DTRA, West Wilton, New Hampshire, 31 March 2004.

<sup>150</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress FY 2003, data as of January 2002, pp. 1-4.

<sup>151</sup> By December 2001, the GAO had conducted 25 formal reviews and testimony statements of the CTR program for the U.S. Congress. See GAO, Testimony, "Weapons of Mass Destruction: Observations on U.S. Threat Reduction and Nonproliferation Programs in Russia," Appendix 1, March 2003.

<sup>152</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress FY 2003, data as of January 2002, pp. 1-4.

<sup>153</sup> See DTRO-M Weekly Reports, U.S. Embassy, Moscow, 2000, 2001, or 2002.

<sup>154</sup> Valery Semin, Department of Security and Disarmament Affairs, Ministry of Foreign Affairs, Russian Federation, "CTR has Potential for Further Development," in Safranchuk, *Cooperative Threat Reduction Program: How Efficient?* pp. 9-12; and Ivan Sfranchuk, "ESOA Program in Russia: Results and Problems of Implementation," pp. 26-27. This criticism was so widespread that it was exception not to find a reference to American corporations taking work form Russian firms.

<sup>155</sup> Interview, Colonel Jim Reid, Deputy Director, CTR Directorate, DTRA, "On Spent Fuel Reprocessing....," *Nuclear Weapons and Materials Monitor*, 24 May 1999, p. 16.

<sup>156</sup> Interview, Luke Kluchko, CTR Program Manager, Defense Threat Reduction Agency, with Joseph P. Harahan, Historian

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Defense Threat Reduction Agency, at U.S. Embassy, Moscow, 30 March 2000.

<sup>157</sup> Cindy McGovern, "Billion dollar contract is new way of doing business for CTR," *DTRA Connection*, October 2001.

<sup>158</sup> *Ibid.*

<sup>159</sup> Interview, N. Shumkov, Director (retired), Department of Missile Technologies, with J. Harahan, DTRA, Moscow, 20 July 2005; Interview, Lieutenant General (Retired) Vasily F. Lata, Director, Strategic Plans, SRF, Russia, with Joseph P. Harahan, DTRA, Moscow, 25 January 2005. See also, Sfranchuk, "ESOA Program in Russia: Results and Problems of Implementation," in Sfranchuk, *Cooperative Threat Reduction Program: How Efficient?*, pp. 24-34. Interview, Edward P. Baal, Deputy Director of Production, Zvezdochka Enterprise, with Joseph P. Harahan, Historian, DTRA, 28 January 2005, Archangelsk, Russia. Interview, Vice Admiral Ashot Arakelovich Sarkisov, Russian Academy of Sciences and Director, Russian Nuclear Safety Institute, IBREA, with Joseph P. Harahan, DTRA, Moscow, 21 January 2005.

<sup>160</sup> Weekly Compilation of Presidential Documents, "Joint Statement by President George W. Bush and President Vladimir V. Putin of Russia on a New Relationship Between the United States and Russia," 13 November 2001, at [http://moscow.usembassy.gov/joint\\_11132001e.html](http://moscow.usembassy.gov/joint_11132001e.html) accessed on 30 November 2011.

<sup>161</sup> *Ibid.*

<sup>162</sup> George W. Bush: "Fact Sheet: Administration Review of Nonproliferation and Threat Reduction Assistance to the Russian Federation," December 27, 2001. Online by Gerhard Peters and John T. Woolley, *The American Presidency Project* at <http://www.presidency.ucsb.edu/ws/?pid=79285> accessed on 30 November 2011. See also, U.S. President George W. Bush, Address to Corps of Cadets, The Citadel, 12 December 2001.

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## **Assisting Russia in Nuclear Weapons Safety and Security, Fissile Materials Storage, and Chemical Weapons Destruction**

Since the beginning of the United States' Nunn-Lugar programs in Russia, General Maslin, Director of the 12<sup>th</sup> Main Directorate, General Staff, had watched carefully and noted the willingness of Defense Department officials to go the extra mile to deliver promised equipment and materials. For that reason the general felt confident his American partners would support his request for 150 new super containers that would enhance the safety and security of nuclear weapons being transported across Russia. Maslin made his request in January 1995 at a Nuclear Weapons Security Group meeting he co-chaired with General Lajoie in Moscow. These containers would provide protection from small arms fire using armor piercing ammunition. They would also prevent destruction by fire up to 1,472 degrees Fahrenheit. Additional sensors would preclude unauthorized access to warheads inside the containers. General Maslin explained that the Russian General Staff had estimated the Strategic Rocket Forces and Russian Navy would be shipping up to 2,000 warheads per year to the Ministry of Atomic Energy's dismantlement and storage facilities. He added, "We were already talking about terrorism then, that those weapons could be stolen."<sup>1</sup> As expected, Lajoie supported his request and briefed Secretary Perry, Ash Carter and Harold Smith about it. With the Pentagon's backing secured, Lajoie proceeded with defining technical requirements and funding levels.<sup>2</sup>

Less than three months later on April 3, 1995, General Maslin and Secretary Perry signed a new bilateral agreement on Nuclear Weapons Transportation Security.<sup>3</sup> The Department of Defense agreed to provide up to 150 super containers. At subsequent technical meetings in Washington

and Moscow, Generals Maslin, Yakolev, Lajoie and their staffs refined the requirements and agreed to a request for five modules of emergency response equipment that would be used if there were a nuclear accident or incident during transport. As a Soviet specialist, General Lajoie knew that the Russian nation covered the world's largest landmass, so he thought the request for multiple sets of emergency equipment was reasonable. In addition, the staffs recommended including requirements for logistics support, training manuals in Russian and a shipping schedule. In the fall of 1995, the Defense Department conducted a "full and open" solicitation for the manufacture of the 150 super containers. Strachen and Henshaw Inc., a British firm won the contract and over the next two years the containers were manufactured, tested, equipped, shipped and delivered to the Russian 12<sup>th</sup> Main Directorate in Moscow. During the tests, 12<sup>th</sup> Main Directorate technicians revealed that the rail cargo cars would need new lashing chain restraints and new safety kits for before the containers could be used throughout the entire railroad system. Two British firms won small CTR contracts to manufacture and deliver these new items in 1997.<sup>4</sup>

As this super container project was underway, CTR officials in Washington acquired the new emergency response equipment, shipped it to Moscow in the spring of 1996 and then scheduled training at designated sites in Russia.<sup>5</sup> The project consisted of five large mobile kits, each with three containers that held modern radiological evaluation equipment; local area communications systems; rescue and access equipment; diagnostic systems; individual protective

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clothing and gear; and portable generators. Once the equipment arrived in Moscow and was inspected, the 12<sup>th</sup> Main Directorate shipped one emergency support kit to each of five regional sites located in the Far East, Western Siberia, Volga-Urals, Central Russia or Northwestern Russia.<sup>6</sup> A key element of this emergency response equipment project was the acquisition and delivery of a new information analysis system that could be used in case of a nuclear accident to predict, update and display the effects of radiation and contamination over an affected area. The new analytical system would provide a capability for continuous oversight and display of events during accident remediation. It was also designed to exchange information, and communicate and track the activities of other agencies.

The system's command and control center was located in Moscow for the mitigation of emergency situations. A separate response center was located at the Scientific Research Center for the Security of Technical Systems in St. Petersburg. It managed an electronic display map, a database of all sites and potential problems, and computer software

for the system. Another two special mobile groups located in Moscow and St. Petersburg, each consisting of an on-scene commander and a special team equipped with event diagnostics, position determination equipment, radiation surveillance and accident site operational capability. Finally, there were the five special emergency response units located in the five regional sites across Russia.<sup>7</sup>

For new ideas and project recommendations, the two nations set up a joint structure for dedicated program managers and policy leaders. By 1995 the U.S.-Russian Nuclear Weapons Security Group, co-chaired by Generals Maslin and Lajoie was meeting regularly to examine new requests for CTR assistance, review progress on specific projects and make recommendations for expanding existing programs. A special section in the 12<sup>th</sup> Main Directorate managed and directed CTR programs throughout Russia. Initially, this section was led by Major General Yakolev as the senior officer responsible for dealing with all the Russian aspects of CTR Nuclear Weapons Safety and Security programs. In that office, Colonel, then Major



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Super containers

General Vladimir P. Frolov directed and managed most of the significant CTR projects. In the United States, General Lajoie assigned program management in these areas to Colonel Jay Stobbs of the CTR Program Office and Bill Moon from the Defense Nuclear Agency.

Throughout these years, the critical factors that made these complex international projects work were the frequent Nuclear Weapons Security Group meetings, weekly telephone calls and the trust that developed between Maslin and Lajoie and the program management staffs. General Maslin thought this new emphasis became one of the CTR program's major advantages; specifically he found that "pragmatic concepts" were followed by program managers and they led to projects with "concrete implementation."<sup>8</sup> Bill Moon, a participant in many of these meetings, concluded the general-to-general officer relationship developed a level of trust that greatly assisted the work of implementing these cooperative projects. Equally significant, that trust translated directly into cooperation when discussing and developing new projects. After every extended trip to Russia and the region, Lajoie met with Secretary Perry and his senior CTR advisors and briefed them on the state of the dialogue, issues and progress.<sup>9</sup>

## Security Enhancements for Russia' Nuclear Weapons Storage Sites

In April 1997, while Clinton and Yeltsin held their summit meeting in Helsinki, Maslin and Lajoie launched an extraordinary new project called the "Quick Fix." The project, conducted under a CTR implementing agreement signed in April 1995, was designed to improve the control, security and safety of nuclear weapons at the Ministry of Defense's nuclear weapons storage sites. At 50 Ministry of Defense sites located across Russia, the United States CTR program would fund procurement of a Quick Fix system consisting of 50 sets of perimeter security fencing, with an inner and outer layer of fencing.<sup>10</sup> These fences would surround a third fence, one with a vibration cable and microwave sensors. In all, the project called for up to 31 miles of fencing with 350 sensors and alarms, and 200 microwave systems.<sup>11</sup> The project was very timely because an estimated 4,000 warheads would be placed in these nuclear storage sites during the next decade.<sup>12</sup>

While the exact number of the Ministry of Defense's national-level nuclear weapons storage facilities was not



Major General Ronald Lajoie and Colonel General Yevgeny Maslin

public knowledge, one expert estimated by the year 2000 the ministry would have consolidated warheads and nuclear materials into 13 to 15 national facilities and a number of satellite storage depots. Each national facility consisted of a series of large reinforced bunkers designed to hold hundreds of nuclear warheads. The American "Quick Fix" project would replace the inner fence, add new sensors and alarms, and include the new microwave systems. In addition, the project would procure snow blowers, special installation equipment and some fire protection equipment. U.S. CTR officials declared they would contract with a Russian manufacturing firm to produce the fencing and assemble the equipment. The 12<sup>th</sup> Main Directorate officials stated they would accept and inspect everything, finance delivery to the nuclear security depots and pay Russian firms to install it.<sup>13</sup>

The initial "Quick Fix" project, which was conducted under the Nuclear Weapons Storage Security Agreement, moved quickly ahead during the summer months of 1997. Bill Moon, program manager, and Lieutenant Colonel William Conner, the project officer contracted directly with Tensor, a Russian firm, to make the security fencing.<sup>14</sup> A major hurdle in implementing the project was Congress' insistence that auditors must have access to military storage facilities to determine if the materials (fencing, sensors and microwave cables) were being used as intended. In September, the Russian Ministry of Defense agreed to discuss with the United States how to document the system's installation at some of the sensitive sites. Everyone knew reaching an agreement would be difficult because the Russian General Staff had no intention of allowing

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any American auditors or inspectors access to its sensitive nuclear weapons storage sites. To resolve this dilemma, Russian and American officials worked out a compromise agreement that would satisfy both sides. Russian military commanders at the site would place a camera in a locked box at a location some distance away from the storage site, and both sides would have seals and joint custody.



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New CTR security fencing

During an American audit, the team chief would unlock the box and give the camera to a Russian officer who would go to the nuclear weapons storage facility, take photos of the newly installed fencing and sensors, and date and time stamp the photos. Upon his return, the Russian officer would give the photos to the American inspector. Because of the remoteness of the sites, the short amount of time for taking photos, and the locked and sealed box, American officials concluded they had sufficient physical evidence to satisfy Congressional scrutiny. Senator Lugar and his staff agreed; the senator used his influence to persuade key legislators to endorse this practical method of documenting the work.<sup>15</sup>

With the issue of documentation resolved, Quick Fix moved ahead rapidly in the fall of 1997. In October, the Defense Department approved production and shipment of the first three sets of Quick Fix equipment from the Tensor Manufacturing Association to the military facility at Sergei Posad. When these sets were accepted by the military command, CTR program managers purchased, inspected and transferred the complete Quick Fix system to the Ministry of Defense's 12<sup>th</sup> Main Directorate. Beginning in 1998, Tensor manufactured and delivered the security fencing and anti-intrusion devices to the Ministry of Defense

storage warehouses in Moscow for the 12<sup>th</sup> Main Directorate to install at the first of 50 nuclear storage sites.<sup>16</sup>

That year, reorganization of the Russian military forces' nuclear missions sought to standardize safety and security procedures and practices at all Ministry of Defense nuclear weapons storage facilities and sites. In the process, 42 Russian Navy bases, six Air Force sites and 25 Strategic Rocket Forces bases transferred responsibility for nuclear warhead security to the 12<sup>th</sup> Main Directorate. Since the 12<sup>th</sup> Main Directorate was already straining to finance the upgrades at 50 sites, it would be unable to do so for an additional 73. As a result, Colonel General Igor Valynkin, the directorate's new commander, requested that the U.S. CTR program fund the purchase of Quick Fix fencing and sensors for all 123 warhead storage sites. American officials readily agreed to expand the program to all sites, planning to increase its contracts with Russian firms, and revising its annual CTR budget request to Congress. Regardless of the bleak Russian



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Colonel General Igor Valynkin

financial situation, the working assumption remained: the Russian Ministry of Defense would pay for and install the fencing and equipment. As a consequence, while the CTR order book filled up, actual security upgrade installations at nuclear storage sites proceeded at a snail's pace. Although American program managers would have preferred a quicker pace, both Russian and American defense ministries remained determined to proceed with this project and other programs that would improve Russian nuclear safety and security.

Another major project that evolved under authority of the bilateral Nuclear Weapons Storage Security Implementing Agreement of 1995 was the Automated Inventory Control and Management System (AICMS). It was designed to enhance the Ministry of Defense's capacity to account for and track nuclear warheads scheduled for dismantlement.<sup>17</sup> The project would automate an existing system that was dependent on manual accounts and older computers. When completed it would connect the nuclear weapons storage sites with central command posts in an integrated network. General Maslin agreed to the project in 1995. Following the normal process of defining technical requirements, making financial estimates, declaring program obligations and notifying Congress, Bill Moon broke the project into several phases.

Initially, it would provide personal computers, software and training in Russian for Ministry of Defense technicians and military officers. The new computers would replace obsolete ones in use across the system. In the fall of 1996, U.S. officials flew to Moscow and demonstrated a prototype AICMS system to Ministry of Defense officials, with new computers, network servers and software. At that time, General Maslin and his staff estimated that the final system architecture, which they would develop in coordination with U.S. technical experts, would encompass 30 sites, including operational nuclear storage sites in the field, regional storage sites, a central command center, a national inventory control center, and a site for developing and testing the system. U.S. officials estimated that the project's budget would be \$22.6 million.<sup>18</sup>

In the project's next phase, the Russian Ministry of Defense set up and staffed a small, new developmental office to evaluate the new AICMS system. In 1998, the U.S. acquired and delivered to Moscow an additional 100 computers and peripherals to assist the Russian staff in testing and

accepting the equipment.<sup>19</sup> This staff would also develop the system's architecture and initial database configuration. Joint program documents required that the Russian Ministry of Defense inspect and certify the system prior to proceeding with the final, operational phase. RNT, a Moscow high-tech firm, received a contract in 1999 to assist Ministry of Defense officials in the certification process and develop a



William M. Moon

security profile for the entire system.<sup>20</sup> Still, the operational phase was delayed several times. Then in June 2001, General Valynkin and ministry officials decided to make major changes in the system's requirements, eliminating the need for an integrated weapons inventory control system and accounting for all nuclear weapons in the national stockpile. The new operational configuration would provide computer hardware and software for an integrated system at 18 nuclear storage sites: two central command posts, two central storage facilities, four regional facilities, and 10 storage sites in the operational forces. To simplify the architecture, Russian officials agreed to use a common design at the central command post level, and a common design for the AICMS sites that were below the command echelon level.<sup>21</sup>

Anticipating the start of the operational phase, the CTR program awarded an integrating contract to Black and Veatch in 2000 and a separate contract to Cherokee Information Systems for technical support services. At that time, CTR officials estimated it would take five years

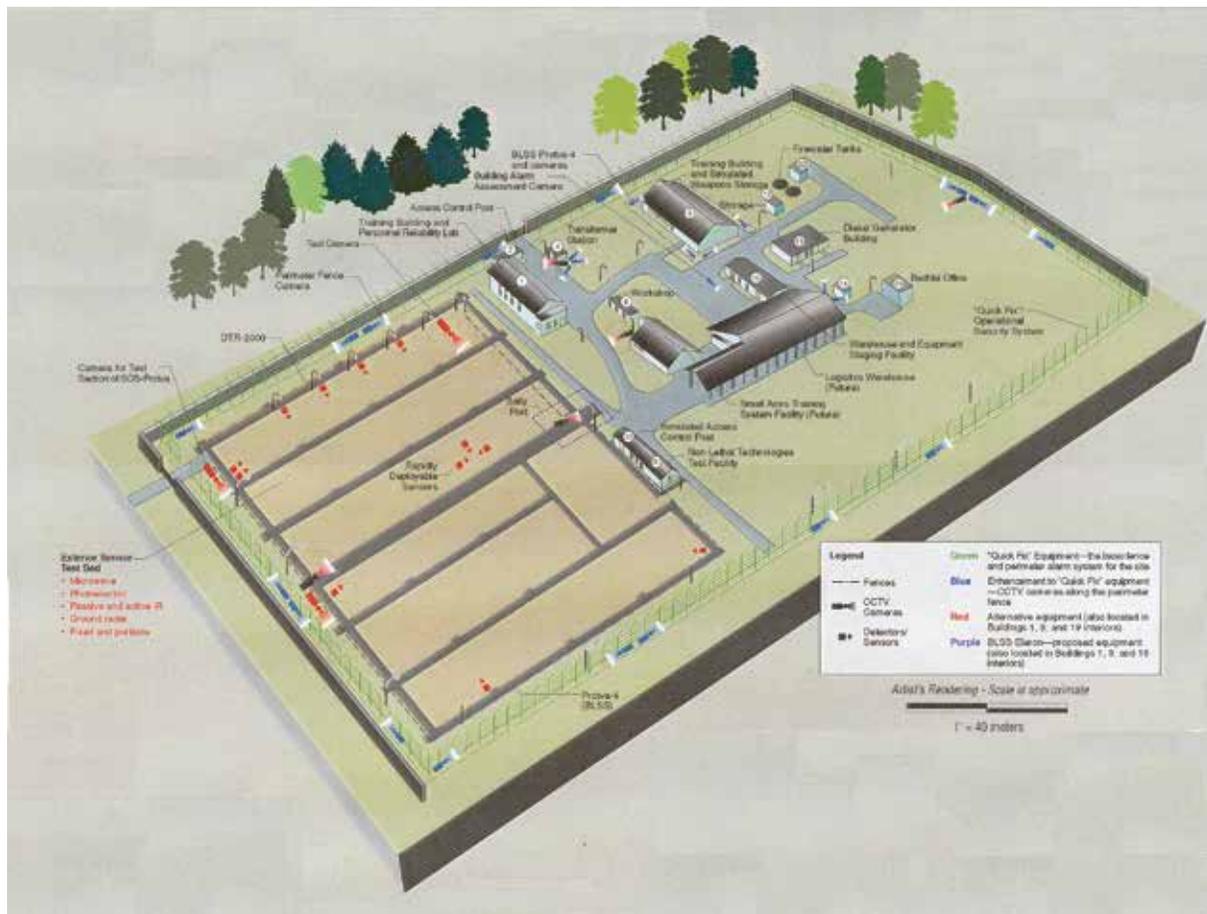
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and approximately \$60 million to acquire and deliver all computer hardware and software, track inspections, certifications, and security accreditations, develop a common facility and site designs, manage installation of computers and network communications, and schedule and conduct training and logistics. If all went as scheduled the AICMS would be installed and operational at 18 Russian nuclear storage sites by 2005.<sup>22</sup>

### General Maslin's new Security Assessment and Training Center

In the Soviet era, nuclear security was constructed around a "3G" concept: guards, guns and gates. That system worked during the Cold War because military guards were trained, compensated and rigorously inspected. It also helped that the nuclear storage sites, indeed the entire USSR, were isolated from the rest of the world.<sup>23</sup> That changed during

the 1990s, and General Maslin recognized that modern technology could be added to the nation's existing nuclear security system. During a joint Nuclear Weapons Security Group meeting in Moscow, Maslin proposed to use CTR funds to establish a new Russian Ministry of Defense Security Assessment and Training Center (SATC) at Sergei Posad, a military site located northeast of Moscow.<sup>24</sup> The new center's mission was to become the Ministry of Defense's test and evaluation center for the nation's future nuclear security requirements. The center would have several missions, including testing and demonstrating new U.S. and international security equipment for the national and regional nuclear weapons storage facilities and establishing a modern center for training the ministry's security guard forces on the equipment and systems. An unwritten, but discussed assumption was General Maslin's concept that a "curtain" would separate the new center's missions and facilities, where access would be relatively transparent and



Security and Assessment and Training Center, Sergei Posad

open, from the Ministry of Defense's actual nuclear weapons storage sites, where access would remain tightly controlled and closed. From the beginning, General Maslin and the senior staff at the 12<sup>th</sup> Main Directorate drove this project.<sup>25</sup>

Upon review, General Lajoie, Harold Smith, Ted Warner, Laura Holgate and other Defense Department officials agreed with the center's concept and missions, and proceeded to award a small contract to a Russian firm, Eleron, for a feasibility study. Eleron produced a design concept for the new security center, which was reviewed by the joint Nuclear Weapons Security Group in December 1997. To manage design and construction of the rapidly developing project at Sergei Posad, CTR officials selected Bechtel as the American integrating contractor. In Moscow, General Maslin assigned oversight and management of the project to Major General Yakolev and Colonel Frolov. At this point, American CTR program managers and their Russian partners assumed the new center would become the focal point for defining and requesting new equipment that would be purchased, delivered and installed with CTR funds. Once tested and proved, equipment would be ordered and manufactured in large quantities for installation at nuclear weapons storage sites across Russia. Both sides managed this program through joint planning documents, coordinated schedules and frequent meetings with the integrating contractor at the site. Colonel Frolov recalled that he spoke with Bill Moon and Lieutenant Colonel Ben Conner, the Security Assessment and Training Center project manager, by telephone practically every week.<sup>26</sup>

On Friday February 13, 1998, just eight weeks since the center's design concept was approved, Secretary of Defense Cohen and Minister of Defense Marshal Sergeyev participated in a ceremony establishing the Security Assessment and Training Center.<sup>27</sup> Following a tour of the partially built facilities, which were being renovated or under construction, Sergeyev and Cohen spoke to the press and assembled visitors.<sup>28</sup> Both leaders commented on the new center's important work in developing and sustaining the highest standards of safety and security for the nation's nuclear arsenals. Secretary Cohen declared this work a "solemn responsibility of all nuclear powers."<sup>29</sup> At the same time, there were two additional projects underway for the new Security Assessment and Training Center. U.S. military officers had demonstrated to Russian security officers a program widely used by American strategic nuclear forces. For more than 20



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U.S. Secretary of Defense William Cohen and Russian Minister of Defense Marshal Igor Sergeyev at SATC dedication ceremony, February 1998

years U.S. military commanders had used a special Personal Reliability Program (PRP) to register, train, evaluate and track all military personnel handling or working with nuclear weapons with drug and alcohol testing devices, polygraph equipment, and a site drug analysis and testing laboratory. Among Russia's military forces, the Strategic Rocket Forces had developed and instituted a similar personnel program, but General Maslin decided certain aspects of the American



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Security camera provided by CTR

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program could be useful within the 12<sup>th</sup> Main Directorate and its 30,000 personnel, and requested equipment associated with each component. Lieutenant Colonel Conner acquired the equipment and had it delivered to Sergei Posad, where they began teaching a 10-week training course for Russian nuclear security experts at the Security Assessment Training Center.<sup>30</sup>

Another project was a computer simulation program, called Analytic System and Software for Evaluating Safeguards and Security (ASSESS), that could model and evaluate the physical protection system at a nuclear weapons storage site against a series of internal and external threats. This system was also able to evaluate the material, protection, control and accounting systems being used to track nuclear warheads and materials. Developed by the U.S. Department of Energy for use at American storage sites, ASSESS was a preventive system for thwarting possible theft or sabotage. Although this system was included in the Security Assessment and Training

Center project, it would take many years and considerable negotiations and testing before the Russian Ministry of Defense agreed to its use.<sup>31</sup>

On November 1, 1999, General Colonel Valynkin and Brigadier General Kuenning, General Lajoie's successor as director of the CTR Program at the Defense Threat Reduction Agency, officially opened the Security Assessment and Training Center at Sergei Posad.<sup>32</sup> The opening ceremony was attended by Russian Ministry of Defense officials, local government representatives, and approximately 50 members of the Russian and international media.<sup>33</sup> When General Kuenning spoke to the Russian military, public and international press, he explained that the new center's purpose was to serve as a central site in Russia for testing new security technologies and procedures, and he declared that the CTR program anticipated funding comprehensive sets of new security equipment for installation and operation at Russia's nuclear weapons storage sites. For his part, General



Ribbon cutting by General Colonel Valynkin (l.) and Brigadier General Kuenning (r.) at the Security and Assessment and Training Center at Sergei Posad

Valynkin welcomed American assistance while maintaining that Russia's weapons were and would remain secure. He declared that Russian guard forces would be trained at the new facility to operate and maintain the new equipment in the field. Anticipating the media's question of why the United States was funding the project, Kuening, explained: "It's inherently in the interest of the United States to ensure that nuclear weapons remaining in Russia are secure and do not proliferate."<sup>34</sup> As the day was ending, Bill Moon added a different perspective, "The big accomplishment of this (ceremony) is the openness of the Russians. They allowed international news media access to the site and even invited their own Russian press."<sup>35</sup>

From this point, Russian and American project managers turned to negotiating the technical requirements that would define a comprehensive suite of new security and safety equipment. Colonels Frolov and Lieutenant Colonel Conner led a joint task force of Ministry of Defense officials, 12<sup>th</sup> Main Directorate officers, American contractors and U.S. nuclear security experts.<sup>36</sup> Meeting frequently for more than year and a half at the new Security Assessment and Training Center, the task force developed a series of program objectives for each nation's directorates. The comprehensive requirements package, known as the Physical Protection System included:<sup>37</sup>

- Physical Protection System command and control system
- Closed – circuit television system (CCTV)
- Intrusion detection equipment (interior and exterior)
- Rapid deployable sensor systems
- Access control systems
- Vehicle barrier and personnel access delay systems
- Hazardous and prohibited materials detection systems (metal, explosive, nuclear)
- Fire and safety systems
- Guard Force equipment
- Comprehensive training packages
- Logistics for all systems

Once the list was complete, the task force recommended a new U.S.-Russian CTR implementing agreement be developed and signed by the respective defense ministries. In June 2000, General Valynkin and Jim Reid signed the

new agreement.<sup>38</sup> At that time, U.S. CTR program managers projected the five-year cost would be \$27.2 million for acquiring prototype physical protection systems, delivering them to the center, establishing testing protocols, conducting actual tests, integrating the results into standard suites, training, and providing logistics and maintenance support. Work began immediately, with Bechtel program managers installing new equipment at the SATC facility and instituting training courses for the first echelon of Russian military security officers. The Russian staff developed the center's testing protocols and procedures, and began multiple-level tests to integrate the computer system's software and hardware. After the implementing agreement was extended in January 2000, the Russian-American task force developed a coordinated schedule for the entire program, which projected equipment testing, final check out and acceptance, integration and training would occur from 2001 to 2005.<sup>39</sup>

While this program schedule was slower than some CTR managers desired, one project developed along a faster path. At one of the bilateral nuclear weapons security group sessions in Moscow, Bill Moon recommended that General Frolov and the 12<sup>th</sup> Main Directorate consider a project that would provide the troops guarding nuclear weapons sites with new small arms training systems, and live-fire shooting ranges, specialized equipment and logistics support.<sup>40</sup> After study, General Valynkin requested the CTR program fund the small arms training systems that could be placed at sixty nuclear weapons sites across Russia. Accepted, reviewed and funded quickly in 2001, the CTR managers of the Guard Force Equipment and Training project acquired and delivered 60 sets of small arms training systems with modified weapons. The following year, the training required to operate and maintain the live-firing ranges was carried out at the Security Assessment and Training Center.<sup>41</sup>

A review of the assumptions governing these bilateral nuclear security assistance programs revealed that Russian leaders operated under the "curtain" concept. Discussions, negotiations, acquisition and delivery of new CTR equipment and training would be done in Moscow or Sergei Posad; but no American would be given access to Russian national nuclear weapons storage facilities, or to military nuclear storage areas or weapons transfer depots. Under Russian law and military regulations, locations of the storage facilities remained a state secret and General Valynkin denied foreigners any access to these secret locations.<sup>42</sup>

Bill Moon acknowledged these assumptions, but insisted that at some point U.S. auditors would need access to the sites and facilities to certify that equipment was being used as intended.<sup>43</sup> Congress demanded that the Defense Department negotiate and conduct audits and examinations. As a result, a protracted stalemate developed.

By 2001, Moon concluded that the CTR program had run out of nuclear security projects he could justify funding, without access to the sites. At the same time, General Valynkin's senior staff was requesting CTR funding for major new projects that would provide American technologies, equipment and services to enhance safety and security at Ministry of Defense nuclear storage facilities holding thousands of nuclear warheads and materials. The Americans believed that if the Russian government wanted this assistance, then the Russian ministry and security directorates had to make concessions. The impasse continued, unresolved. A solution finally presented itself, one that involved adapting methods used to verify projects developed and carried out by the Russian Navy and U.S. Department of Energy.

### Securing the Russian Navy's HEU nuclear fuels and warheads

For six years, from 1995 to 2001, a parallel program between the Russian Navy, the Kurchatov Institute, U.S. National Laboratories and Department of Energy had resolved many of the same access and auditing issues. In March 1995, Admiral Gromov, Commander in Chief of the Russian Navy requested that Kurchatov Institute develop a program for instituting a material protection, control and accountability (MPC&A) program for the Northern Fleet's approximately 73 tons of highly enriched uranium nuclear fuel, 4,000 nuclear warheads, and substantial quantities of spent naval fuel. With security at its nuclear storage sites deteriorating, some theft of nuclear fuel had already occurred and seemed likely to happen again. Less than a year after Admiral Gromov's request, Kurchatov Institute and the Russian Navy partnered with Department of Energy and the U.S. National Laboratories to develop a protocol for material protection, control and accountability assistance at Site 49, the fleet's fresh HEU storage site near Murmansk. The Russians insisted the U.S. provide a small four-person technical team who would work at this and all other sites. The initial work of rapidly upgrading security at Site 49 was

so successful, it became a model for cooperation between the Department of Energy and the Kurchatov Institute as the general contractor.<sup>44</sup>

In 1997 Admiral Vladimir Kuroydev, new Commander in Chief of the Russian Navy signed a comprehensive agreement for additional HEU storage site security improvements with Francisco Pena, Secretary of Energy. In the following years, the Department of Energy worked closely with the Russian Ministry of Atomic Energy to establish materiel protection, control and accountability projects at 53 sites across Russia where highly enriched uranium or plutonium had been produced or stored. By December 1998, working cooperatively, teams at Ministry of Atomic Energy and Department of Energy had protective upgrade systems in place at more than half of the 53 HEU and plutonium sites.<sup>45</sup> While the Russian Navy deemed the Northern Fleet's HEU storage facilities most at risk, it signed another bilateral agreement in 1999 requesting Department of Energy implement a series of security upgrades at the Pacific Fleet's nuclear storage facilities. By 1999, these efforts were so successful that the Russian Navy and the Energy Department agreed to plan and carry out a series of rapid and comprehensive security upgrade projects at all of the fleet's nuclear warhead storage facilities.<sup>46</sup>

The Russian Navy controlled each project tightly. Admiral Nikolay Yurasov, Chief of the Inspectorate for Nuclear and Radiation Safety and Security led the effort to identify Northern and Pacific Fleet facilities and sites with inadequate security, and fix them rapidly. Each project was carried out under a confidentiality agreement that stipulated nothing could be released or published without the consent of all parties. The small American technical team that had worked in Murmansk remained intact and contracted with the Kurchatov Institute and Russian subcontractors for the security upgrades. Together they provided comprehensive security improvements inside and outside the warhead bunkers: installation of new security cameras, electronic access control systems, and microwave and anti-intrusion devices within approximately six months. The work was documented and results demonstrated prior to payment. Admiral Yurasov and his staff inspected every upgraded facility and the Russian Navy certified, in writing, each project's completion before U.S. representatives inspected the finished work.<sup>47</sup>

By 2002, as a result of cooperation at multiple levels and across military commands and scientific institutes, security upgrades had been completed at nuclear storage

sites holding 99 percent of the Russian Navy's estimated 4,000 nuclear warheads. More comprehensive upgrades were completed at an estimated 40 percent of the 42 sites, with the remaining naval nuclear weapons storage sites being completed in 2003. Security at all of the Russian Navy's facilities holding the estimated 73 tons of HEU fuel had been upgraded and improved.<sup>48</sup> These concrete results stood in stark contrast to the slow progress installing the "Quick Fix" rapid upgrades at the 12<sup>th</sup> Main Directorate's national-level nuclear storage sites. Russian and American security analysts began asking why the two defense ministries could not work together and rethink their intractable positions on auditing and access. That question was at the forefront of negotiations over funding and implementing new large-scale Ministry of Defense site security enhancements.

### Enhancing security at the Ministry of Defense's Nuclear Weapons Storage Sites after 1999

In developing this project, Russian and American officials worked under the assumption that a comprehensive set of site security upgrades for all, or most, of the Ministry of Defense's national and military nuclear weapons storage facilities would follow from the testing and evaluations being done at the Security Assessment and Testing Center at Sergei Posad. Out of that process, which defined the joint requirements and tested the items, grew a comprehensive set of new security equipment, communications systems, training packages and services. Called the Physical Protection System, American CTR managers estimated in early 2000 that the cost of acquiring and delivering the equipment and systems to the Russian sites would be \$572.4 million.<sup>49</sup> While this figure was only an estimate, it was sufficiently large to force new negotiations over the issue of access with the 12<sup>th</sup> Main Directorate and Ministry of Defense. Initially, these negotiations had limited success. As a good faith effort, the Ministry of Defense granted access to American contractors at a single nuclear storage site located at the Aleysk military base where an SRF SS-18 missile division had been decommissioned. There, Bechtel International had managed the work of Russian subcontracting firms who installed the first set of comprehensive security upgrades in the spring of 2001.<sup>50</sup> In the meantime, Russian technicians at the Security Assessment and Training Center completed all of the tests of

CTR-provided comprehensive security equipment. Both sides agreed the next step would be vulnerability assessments at each of the nuclear weapons security sites. Those assessments would be followed by acquisition, delivery and installation of security upgrades at each Ministry of Defense site, but only if the access and auditing problems could be resolved. When that did not happen, the bureaucratic impasse continued until a single shocking historic event altered everything.

On September 11, 2001 the United States was attacked by Al Qaeda terrorists. They seized commercial jet airliners and flew them into the World Trade Center and the Pentagon, killing nearly 3,000 people.<sup>51</sup> The attacks were so well planned and organized that both Russian and the U.S leaders recognized quickly the consequences of maintaining poorly secured stockpiles of nuclear, chemical or even biological weapons. Within weeks, the 12<sup>th</sup> Main Directorate's senior generals and Department of Defense CTR officials had reached an agreement on what kind of access would be granted and what kind of procedures would be followed to allow program managers to proceed in allocating funds in early 2002 for completing installation of the Quick Fix upgrades and for initiating comprehensive site security enhancements.<sup>52</sup>

In Moscow, the Russian Minister of Defense submitted a formal request to the Prime Minister and Cabinet, which directed the 12<sup>th</sup> Main Directorate to grant access to American officials and contractors working at selected nuclear storage sites. Subsequently, General Anatoly Kvashnin, Chief of the General Staff wrote the Secretary of Defense, identifying eight sites where the work could begin.<sup>53</sup> In Washington, Moon and Conner moved ahead quickly, planning a project to



Security fencing and cameras provided under the Physical Protection System, Russia

Defense Threat Reduction Agency

install upgrades and new security equipment at those eight sites. They were poised to fly to Moscow in May 2002 when President Bush refused to certify to Congress that the Russian government was in compliance with the provisions of Nunn-Lugar authorization.<sup>54</sup> This sudden decision in effect shut down all new contracts with Russian firms working on the site security enhancements. Although the president signed a temporary waiver six months later, this work stoppage delayed the effort significantly. From then on, delays became the norm rather than the exception in the site security enhancement program.

### **Nuclear Weapons Transportation Security Enhancements after 1999**

Throughout the 1990s, the Russian defense ministry and General Staff were concerned about the large numbers of nuclear weapons that had to be transported over the Russian railway system from operational sites to the national and regional storage sites. In 1995, General Maslin stated that the 12<sup>th</sup> Main Directorate would be responsible for planning and managing the transport of 2,000 warheads every year. When Minister of Defense Marshal Sergeyev decided in 1998 to reduce the size of the Strategic Rocket Forces, Russian naval fleets, and the number of tactical nuclear weapons substantially, even more nuclear warheads and materials had to be transported to the Ministry of Defense's national nuclear storage sites and to the Ministry of Atomic Energy's dismantlement and permanent storage facilities. In response, Russian Ministry of Defense officials requested that American CTR managers consider a new project that would help the 12<sup>th</sup> Main Directorate keep its more than 200 nuclear weapons railcars and trains operational.<sup>55</sup> The Russians justified their request based on security and safety concerns stemming from a major operational increase in transporting nuclear weapons. In turn, the Americans agreed to fund the request based on congressional and administration non-proliferation objectives for enhancing the security, safety and control of Russia's nuclear weapons. In November 1999, officials from the Department of Defense and the Ministry of Defense signed an amendment to the Nuclear Weapons Transportation Security Agreement, directing that the project be developed in three phases.

In the first phase, the 12<sup>th</sup> Main Directorate's specialized nuclear weapons railcars were sent to the Tver Rail Car

Factory, north of Moscow, for basic depot-level maintenance and certification. This same Russian factory had installed the security enhancement kits in 100 rail cars and 15 guard railcars in 1995 and 1996.<sup>56</sup> For this new project, Tver engineers and technicians would be working as Russian subcontractors, with Sandia National Laboratory, as the American integrating contractor, to reequip up to 200 of the specialized rail cars. The performance objective was to obtain the Russian railway ministry's two-year depot maintenance certificate and its 10-year capital maintenance certification. Railcars began arriving at the plant in January 2000, and the work proceeded on schedule. Periodically, the U.S. Defense Department would request reviews of service maintenance documentation, and its auditors would carry out physical inventories of the newly certified rail cars. If discrepancies were discovered, Tver plant managers and CTR program managers would meet, review the process and make changes.<sup>57</sup>

In phase two, the Russian Defense Ministry requested a program to fund factory-level maintenance and repairs that would extend the service life of up to 115 heated nuclear weapon cargo and guard force rail cars. During Russia's long arctic winter, special military trains were required to transport nuclear warheads in heated rail cars from the Ministry of Defense's national storage sites to Ministry of Atomic Energy's dismantlement and permanent fissile materials storage facilities. Consequently, U.S. CTR managers committed to funding the Tver Plant to manufacture and equip up to 115 new heated railcars, if the Russian government requested them, and if they agreed to eliminate up to 215 of the older specialized rail cars.<sup>58</sup>

As the initial phase of the railcar maintenance and certification program unfolded, the Russian Defense Ministry requested direct financial assistance to pay for the special military trains moving nuclear warheads across the nation. Within the Russian government, defense funding, even for critical national missions like transporting nuclear weapons, had dried up. The situation grew critical in August 1998 when the Russian ruble collapsed.<sup>59</sup> The Clinton administration reacted to Russia's financial crisis by reemphasizing the importance of cooperative security and nonproliferation efforts, especially the Cooperative Threat Reduction program. In January 1999 President Clinton proposed in his State of the Union address that Congress expand CTR and other Nunn-Lugar cooperative programs with the Russian

government.<sup>60</sup> The president singled out those programs that would ensure the safety of nuclear materials and would assist in dismantling warheads. In Moscow, Duma Chairman Gennadiy Seleznev, Foreign Minister Igor Ivanov, and First Deputy Prime Minister Yurily Maslyukov all stated publically the Russian government's willingness to accept U.S. assistance in securing the nuclear weapons.<sup>61</sup> Out of this Russian-American consensus, a project emerged that would have been neither proposed, nor accepted, a few years earlier.

Throughout 1999 the two sides met and discussed ways to contract with the Russian Ministry of Railways and provide American CTR officials with a mechanism for independent oversight and assurances that the money was indeed used to pay for special military weapons trains moving nuclear weapons from Russian national and regional nuclear storage facilities to the Ministry of Atomic Energy's permanent dismantlement plants and storage facilities. Finally, the negotiators agreed to include a provision within the contract authorizing "facilitating agents" who would

provide independent oversight of military train movements and who would certify that the conditions of the contract had been met, prior to payment in dollars.<sup>62</sup> In November 1999, the two defense ministries signed the Nuclear Weapons Transportation Security Implementing Agreement. Since the movement of military trains was extremely sensitive, special arrangements had to be developed between the 12<sup>th</sup> Main Directorate and the U.S. firm, GeoLogistics Incorporated. At no point would the American firm inspect the cargo of sealed and guarded rail cars. Instead, they would monitor movements of the special trains, and then recommend payments to the railway ministry based on published tariffs for the kilometers traveled.<sup>63</sup> During 2000, the first year, the CTR program funded the movement of approximately 10 trains transporting 800 warheads from the national nuclear storage facilities to the permanent dismantlement and storage sites. The payment was \$5 million.<sup>64</sup>

In following years, this project grew in scope and cost. In 2002, the 12<sup>th</sup> Main Directorate stated it planned to



Defense Threat Reduction Agency

Refurbished railcars

ship 66 military special trains each year for the next five years. CTR program managers projected the total cost for funding these Russian trains and the American contractor for five years at \$120.9 million.<sup>65</sup> Two years later, General Valynkin's directorate announced it had increased its annual projection to 72 trains per year. This expanded operational tempo caused Hunter Lutinski, a CTR program manager, to increase the cost projection for the next five years to \$226.2 million.<sup>66</sup> Part of this substantial increase was to absorb tariff increases instituted by the Russian Minister of Railways. Raytheon Technical Services Corporation won a competitive contract to be the "facilitating agent," providing oversight and assurances. Commander Scott Crow, another project manager, estimated the CTR program would fund the movement of Russian nuclear weapons trains through 2011.<sup>67</sup> Many of these special military trains moved nuclear warheads and materials to a new Russian Minister of Atomic Energy's storage facility at Mayak. There the United States CTR program had funded and managed the construction of a new large, fissile materials storage facility. In early 2000, the two efforts intersected: movement of nuclear weapons across Russia by rail, and construction of the massive new fissile material storage facility.

### **Negotiating, designing, and constructing the new Fissile Material Storage Facility at Mayak**

At the very beginning of U.S.-Russian discussions on cooperative projects, Victor Mikhailov, Russian Minister of Atomic Energy, recommended that Nunn-Lugar funds be used to design a modern fissile material storage facility, because Russia's existing nuclear storage facilities did not meet contemporary international standards for safety, security or the environment.<sup>68</sup> At that time, Minister Mikhailov warned that without a new secure, modern storage facility the entire process of dismantling nuclear weapons would come to a halt, since there was no storage facility for the plutonium and highly enriched uranium components in Russia. American officials agreed and included Mikhailov's recommendation for a new nuclear storage facility in the first American-Russian CTR framework agreement in June 1992, signed by Presidents Bush and Yeltsin.<sup>69</sup> Three months later, Minister Mikhailov and Donald Atwood, from DOD, signed the first U.S.-Russian implementing agreement for

design of the fissile material storage facility (FMSF).<sup>70</sup> When finally completed in December 2003, the Mayak project had become one of the largest and most complicated of all CTR construction projects with the Russian government. From concept to completion, the project took 11 years and cost nearly \$400 million.

Like many of these massive cooperative projects, the fissile material storage facility began with one set of shared assumptions that changed dramatically as economic and political conditions deteriorated in Russia; and then changed again, as the project reached its completion. Along the way, there were design and construction delays, congressional investigations, major policy shifts, managerial changes, project redefinitions and reoccurring issues concerning schedule, performance, taxes, customs and site access. On many occasions, the project tested the limits of Russian-American managers' patience and tolerance for meshing completely different systems for designing, constructing, equipping, securing and operating the modern, complex nuclear weapons storage facility.

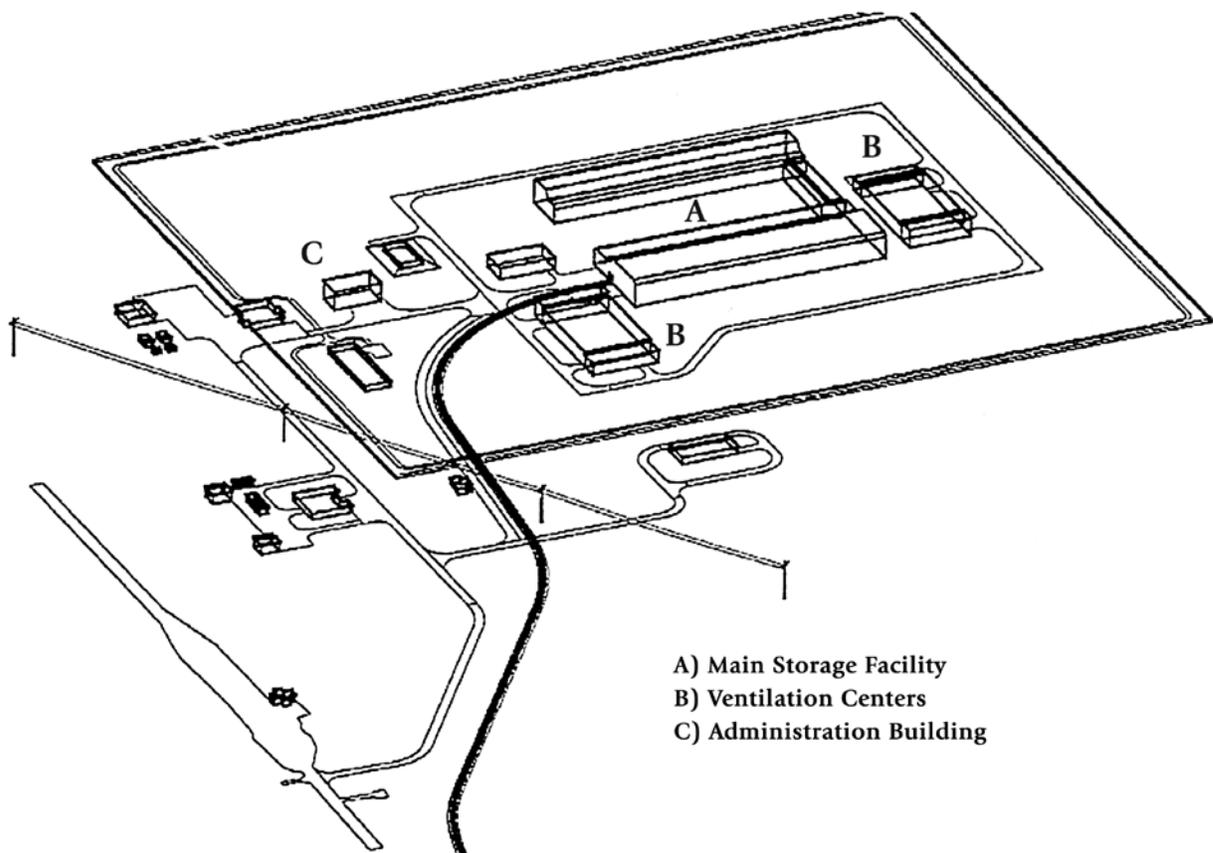
As originally conceived, the fissile materials storage facility was not even to be located at Mayak. Instead, Minister Mikhailov selected the Tomsk-7 nuclear complex, for which the Russian facility design team developed a concept for a massive, modern facility for storing up to 110,000 fissile material containers.<sup>71</sup> In October 1992, the U.S. CTR program obligated \$15 million for work on the initial design concept.<sup>72</sup> The U.S. Army Corps of Engineers' International Division became the contracting office, with work accomplished under a contract with the All-Russian Research and Design Institute of Energy Technologies in St. Petersburg. Another CTR contract with Sandia National Laboratories and the St. Petersburg design institute developed a concept for a specialized storage container for fissile materials that met United Nations sanctioned international standards for safety, security and permanence. In this early Nunn-Lugar project the United States agreed to provide Russia with up to 10,000 new fissile missile containers.<sup>73</sup> When the final plans were completed, the St. Petersburg design team envisioned that the new Tomsk fissile materials storage facility would be a very large hardened, underground facility that used a Russian horizontal storage concept, with the fissile containers sitting on hundreds of storage racks. U.S. construction engineers worked closely with Russian designers, contributing computer-assisted structural evaluations and engineering

analyses of the new facility's safety systems. In September 1993 the U.S. amended the basic implementing agreement, stating it would obligate up to \$75 million to acquire and deliver American construction and storage facility equipment to assist the Russian Ministry of Atomic Energy in constructing and equipping the new Tomsk facility. From the beginning, Mikhailov asserted that the Russian government would pay for the cost of constructing the new storage facility and in late 1993, he sought the Russian government's approval for final site selection, facility design, construction schedule and budget commitments.<sup>74</sup>

At that point, the minister's plans unraveled. A major explosion at the Tomsk-7 complex's radiochemical plant reinforced local opposition to constructing the massive new fissile material storage facility. As the protests grew in intensity, Mikhailov cancelled the Tomsk site and directed that the storage facility would be built at the Mayak Chemical

Combinet, located in the Chelyabinsk oblast.<sup>75</sup> At Mayak there were five large plants; all were involved in manufacturing and production of nuclear weapons, and the nuclear reactor industries. Combined, the five plants and complex employed approximately 20,000 people.<sup>76</sup> The Mayak Production Association was a critical complex, one that supported Russia's nuclear power cycles, military nuclear fuels, and fuels and nuclear materials used in research reactors. Mayak was already a major fissile material storage site, with an estimated thirty tons of reactor-grade plutonium stored at its plants.<sup>77</sup> The new American-Russian funded fissile materials storage facility would encompass 42 acres and be situated on the edge of the Mayak combine.

No sooner had Minister Mikhailov made this crucial decision, than he directed to change the design schematic from a horizontal to a vertical storage concept. This decision altered virtually every aspect of the facility's plans, forcing a



- A) Main Storage Facility
- B) Ventilation Centers
- C) Administration Building

### Russian Fissile Material Storage Facility Site Plan

Site plan for Fissile Material Storage Facility, Mayak

major redesign. Construction did start, however, schedules soon lapsed due to inadequate funding.<sup>78</sup> Then in 1995, Mikhailov appealed directly to Secretary of Defense Perry to have the CTR program finance up to 50 percent of construction costs. Perry agreed and signed amendments to the basic implementing agreement.<sup>79</sup> He authorized Roland Lajoie at the CTR program office to move forward with its plans to identify an integrating contractor to manage the large-scale construction project.

When Bechtel National won the competitive contract from the U.S. Corps of Engineers in March 1996, it was a cost-plus award fee.<sup>80</sup> At the time many senior U.S. officials, including Lajoie, were skeptical the storage facility would ever be completed. In 1996, the Government Accountability Office recommended to Congress that it withhold U.S. funds for the Mayak project until Department of Defense officials could resolve issues of access to the facility and assurances from the Ministry of Atomic Energy that it would provide data on the type and amount of nuclear materials that would be stored there permanently.<sup>81</sup> While Congress was deliberating, Bechtel moved ahead with establishing a small field office at Mayak and awarded subcontracts to the Russian firms, Research and Design Institute of Energy Technologies, the Scientific Research Institute of Experimental Physics, the South Urals Construction Company and various other Russian enterprises and institutes. Construction moved into the second phase, with work starting on the storage facility's foundation.<sup>82</sup>

In 1996, Laura Holgate, a senior CTR official, estimated that the 50 percent share of the projected two-wing, 50,000-container facility would cost the U.S. \$275 million.<sup>83</sup> Russia's Ministry of Atomic Energy was expected to take the lead on design, construction, licenses and securing local approvals. Overcommitted and underfunded, the Russian ministry had difficulty meeting these commitments. In June 1997, Mikhalov met with the Mayak plant managers. Speaking to the press, the minister acknowledged that the central government owed the Mayak complex more than 300 billion rubles for state orders that had been completed by the respective plants.<sup>84</sup> Workers were owed 1.3 billion rubles in back wages. Mikhalov made a public promise to pay these wage arrears, but few funds arrived from Moscow. In January 1998, Mikhalov admitted to U.S. officials that the Russian government could not fund its half of the projected costs for the fissile materials storage facility.<sup>85</sup> By late July

the situation in the region had grown so desperate that local miners blockaded the Trans-Siberian Railway, preventing delivery of coal to the Mayak combine's power plant.<sup>86</sup> Ten days later, a power shortage triggered the shutdown of the automatic protection systems at Mayak's two tritium-producing facilities. To make matters worse, the Russian ruble collapsed a month later, triggering a financial crisis and severe retrenchment in all government ministries.

An immediate American response to the crisis was for the CTR program to assume the majority of all funding required for constructing, equipping and integrating the environmental, safety and security systems into the new fissile material storage facility. Simultaneously, a joint U.S.-Russian decision reduced the projected facility to a single wing, with capacity for storing approximately 25,000 fissile canisters of weapons-grade materials. According to experts, this meant Russia would be able to permanently store the fissile materials from 6-8,000 nuclear weapons.<sup>87</sup> The new storage facility had a design capability for storing 50 tons of plutonium and 200 tons of highly enriched uranium. In late 1998 Defense Department officials reported to Congress that the project could be completed by mid-2002 at a revised cost of \$413 million.<sup>88</sup> At the same time the department estimated it would ask Congress for up to \$650 million over five years to assist Russia in preparing, packaging and transporting plutonium from national weapons storage areas to the new facility.<sup>89</sup> As of December 1998, the CTR program had purchased 32,293 fissile materials containers and had delivered 26,456 containers to Russia for use in the new storage facility.<sup>90</sup>

### New manager, new energy

In spring 1999 Thomas R. Rutherford became the Mayak Fissile Material Storage Facility program manager in Washington. After an initial assessment, he concluded that the massive construction project was approximately 30 percent complete, but five to six years behind schedule. Trained as a civil engineer, Rutherford held an advanced degree in construction management, and had more than 35 years experience in managing complex construction and engineering projects for the Department of Defense. "I'd never been to Russia before," he explained, "so I felt it would be a good time, a good opportunity to close out my career with a large, complex facility involving all disciplines

of engineering and a new discipline for me, which was nuclear materials management."<sup>91</sup> Rutherford's program management objective was to oversee the design, planning and construction of the new complex at Mayak that would provide centralized, safe, secure and ecologically sound storage of fissile materials derived from the dismantlement of nuclear weapons. The large-scale construction project involved integrating multiple systems to provide power, heating, cooling, material handling, material control and accounting, physical protection, radiation monitoring, fire detection and protection, and explosive detection with all aspects of the physical construction.

To give but one dimension of the project's scale and complexity, the major storage building's 23 feet thick walls and 26 feet of solid concrete roof were capable of withstanding earthquakes, artillery fire, and aerial bombs.<sup>92</sup> After only a few months in his new position, Rutherford recalled, "It became obvious to me that I needed to be on the job site once a month. I needed to walk down into the facility, let myself be seen by everybody involved, appraise what they were doing and compare performance against plan."<sup>93</sup> From then on and for the next four years, Rutherford traveled constantly to Russia to visit the site and meet with John Linderman, the Corps of Engineers' resident engineer and Alexander Superfin, Bechtel's project manager. The U.S. Army Corps of Engineers managed the design and construction contracts for the new facility. At the site, Russian officials restricted the number of Americans working to 10 people. Bechtel was responsible for day-to-day operations and executing the various construction subcontracts.

As Rutherford drove the construction project forward, securing VAT waivers from the Russian government for subcontracting firms, acquiring customs waivers for American equipment shipped to Russia, increasing site access for Bechtel's managers and construction engineers and persuading MinAtom's bureaucracy in Moscow to assist in resolving these issues, he learned that these were persistent issues. He worked directly with Ministry of Atomic Energy on each of these problems. On the VAT, the South Urals Construction Company requested a waiver of 2.3 million rubles for contract work already performed. Tax bureau officials in Moscow and Chelyabinsk refused to recognize the waiver in the CTR Framework Agreement. On the issue of Russian customs waivers for American equipment and supplies, Russian officials routinely held up equipment

at Russian ports for six to nine months, insisting that contractors pay customs duties. Without this equipment the construction schedule could have been delayed. Site access at Mayak had always been limited to 10 Americans; a number Rutherford maintained was inadequate for the size and complexity of the project. Since MinAtom's leadership made little effort to resolve these issues, Rutherford turned to using the contracting process and instituted an "incentive" program with the main construction firm, South Urals Construction Company.



Defense Threat Reduction Agency

Fissile Material Storage Facility, Mayak

By 2000, that company's senior managers, A.G. Beloshitsky and Vladimir Derevyanko, had transformed the enterprise into a private business enterprise. They and their staff learned and understood construction project skills: estimating, planning, programming, risks and profits. "They understood making money," Rutherford explained, "if you can set up an incentive plan – take your schedule, identify the milestones that are critical, and then if you can pay them an additional amount, an incentive, to achieve that objective, on time and within scope, they will bust their butt to do that."<sup>94</sup>

Besides causing difficulties and delays for construction of the Mayak facility, Russian officials' determination to guard the secrets of its nuclear weapons programs nearly turned off the project's funding stream in the United States. In 1997, Congress barred the Department of Defense from obligating FY1998 funds for the Mayak facility until the department and the Russian ministry negotiated an agreement on the facility's use. Congress wanted written assurances from the Russian government and the Ministry of Atomic Energy that plutonium being placed in permanent storage in the new Mayak facility would in fact be fissile materials derived from



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Senator Richard Lugar at the Fissile Material Storage Facility, Mayak

nuclear weapons. The rationale was that if the plutonium in the new facility had originated from the military force's nuclear weapons systems, then this fact would provide evidence that the Russian government was dismantling its weapons. U.S. CTR policy officials had always insisted that the Mayak storage facility would be used for the permanent storage of weapons-grade plutonium, defined as plutonium with a high concentration of Pu-239 isotopes, and weapons-grade uranium, defined as enriched to at least 90 percent U-235.<sup>95</sup> When the U.S. proposed that measurements be taken as the fissile material canisters were being loaded into the storage facility, Russian negotiators rejected these demands, citing sensitive national security laws.<sup>96</sup>

In 1999 the Department of Defense requested from Congress an additional \$172 million in CTR funds to initiate construction on the storage facility's second wing.<sup>97</sup> Congress balked at funding the new wing without the

Russian government negotiating and signing a transparency agreement, permitting U.S. monitors to examine and certify permanent storage of the nuclear materials. In addition, Congress required that the Defense Department negotiate with the Ministry of Atomic Energy for a statement certifying that the second storage wing was required, and to provide detailed cost estimates.<sup>98</sup> Negotiations proved futile as Russian ministry officials neither certified requirements for the projected new wing, nor provided any cost estimates. When U.S. negotiators asked the Russia ministry to declare that it would not remove any of the fissile materials scheduled to be stored permanently in the Mayak facility, the Russians refused. When U.S. officials requested the ministry grant American monitoring teams access to the Mayak facility six times a year and provide them with data from the facility's materials control and handling systems to confirm the status of the inventory, Russian negotiators declared that they would consider these requests.<sup>99</sup> Continued negotiations, however, failed to produce a bilateral agreement.

At Mayak, meanwhile, construction work on the new storage facility proceeded on schedule, with completion projected for December 2003. The specter of finishing all construction and systems work on the massive, world-class nuclear materials storage facility, without any agreements on its use or monitoring caused senior Defense Department officials to institute another round of negotiations. In early 2002 Lisa Bronson, Under Secretary of Defense for Technology Security Policy and Counterproliferation, requested a written reply from the Ministry of Atomic Energy designating the amount of fissile materials that would be stored at the Mayak facility. By May 2002, when Presidents George Bush and Vladimir Putin held their first summit meeting in St. Petersburg, there was still no reply. Although the two presidents signed the Strategic Offensive Arms Treaty, reducing each nation's nuclear warheads by two-thirds from the START I Treaty, there were no side agreements concerning the storage facility at Mayak. A visit to Mayak by Senators Lugar and Nunn the same month also failed to produce any written commitments.<sup>100</sup> Finally, nearly a year later in April 2003, MinAtom's chief of international cooperation stated in writing that Russia planned to store 25 tons of excess plutonium in the Mayak facility. The letter further explained they planned to reprocess excess highly enriched uranium for resale under the existing U.S.-Russian Federation HEU Agreement.<sup>101</sup>

As far as the Department of Defense was concerned, the letter was too little and very late. Furious that the U.S. was funding, managing, and equipping for Russia the largest and most modern single storage facility in the world for weapons-grade plutonium, Paul Wolfowitz, Deputy Secretary of Defense, wrote Alexander Rumyantsev, Minister of Atomic Energy, in June 2003 demanding that he sign a new implementing agreement, stating Russia's intended use of the Mayak storage facility.<sup>102</sup> The Russian minister responded promptly, citing the original 1993 framework agreement in which the United States Department of Defense agreed to cooperate with the Russian Ministry of Atomic Energy on construction of the facility. Neither the Russian government nor the ministry, Rumyantsev declared, had agreed to anything further, leaving the decision on how to use the facility to the Russian state. He finished his letter by stating that Russia had already committed to the permanent storage of twenty-five tons of excess plutonium at the Mayak facility. The letter made no mention of how the Russian government intended to use the new facility's capacity beyond the 25 percent of its capacity taken up by the plutonium, nor did it indicate that the Russians would sign any agreement providing the United States with any transparency measures for monitoring the new storage facility. This frosty exchange influenced Tom Rutherford, the CTR program manager, and the Mayak subcontractors as they negotiated final arrangements for turnover and commissioning the construction project on December 17, 2003.<sup>103</sup>

## End Game

Three weeks before the scheduled commissioning, Rutherford and his colleague, Hunter Lutinski, went to headquarters of the South Urals Construction Company in Ozersk. At that point the construction project at Mayak was 100 percent completed, yet there were dozens of unfinished issues such as resolution of the VAT taxes, requirements for spare parts, designation of a new general contractor, fire station staffing and related administrative issues. A series of state committees had to sign certifying reports, before the new facility could be transferred from the U.S. to the Russian Federation. Vitality Sadovnikov, the Mayak complex's general manager indicated that storage facility operators would carry out safety, security and operational tests before the loading process could begin. When Rutherford pressed him on the

status of the bilateral agreement on loading the Mayak FMSF with plutonium and HEU materials, he declined, responding that national policy was established by the Ministry of Atomic Energy in Moscow.<sup>104</sup>

After these meetings at the site, Rutherford and Lutinski flew to Moscow for a meeting with Ivan Kamenskykh, Ministry of Atomic Energy's Deputy Minister for the FMSF construction program. The Russian minister explained their plans for the ribbon cutting ceremony, press releases and senior level participation. At that point, the American program managers provided a letter from Kenneth B. Handelmann, Office of Combating Weapons of Mass Destruction and Nonproliferation Policy in the Office of the Secretary of Defense. It stated the U.S. would not participate in any formal ceremony at Mayak. Further, Handelmann's letter inquired about the status of the draft transparency and audit and examination agreements, which had been sent to the Russian ministry in June 2003.<sup>105</sup>

Handelmann's letter triggered a response. In early December, the Ministry of Atomic Energy sent its comments on the most recent draft transparency protocol. When Department of Defense officials reviewed the Russian response, they



Kenneth B. Handelmann

Department of Defense

judged it as insufficient since major differences remained over the number of monitoring visits per year, amount of time permitted on-site, and procedures for measuring the concentration of fissile materials in permanent storage. Deputy Secretary of Defense Paul Wolfowitz explained these differences in a letter to Minister of Atomic Energy Romyantsev, urging him to rapidly conclude negotiations and signing of the transparency agreement.<sup>106</sup> The two nations were far apart on these issues in December 2003, when the transfer ceremony took place. At the ceremony, Deputy Minister Kamenskyhk, Ministry of Atomic Energy signed

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## For Russia

- ★ 1993 HEU Agreement was paramount
  - ★ Superseded by Mayak Fissile Materials Storage Facility
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the official documents accepting the most modern nuclear storage facility in the world without a single American official present. A week passed before MinAtom's press center released a brief statement on the FMSF commissioning ceremony. It praised Mayak officials, ministry supervisors and the financial commitment of its American partners.<sup>107</sup>

The press release begged answers to two fundamental questions. Why did the Russian ministry accept the new storage facility at all? Part of the answer lies with MinAtom. For decades the Ministry of Atomic Energy, which included the vast state nuclear industry and research and production complexes, was considered one of the most sacrosanct "power" ministries within the Soviet and Russian governments. Its budget, programs, and projects were shrouded in secrecy.<sup>108</sup> It always claimed special status, due to the Soviet Union's and Russia's military status as a super power. Its ministers, like Victor Mikhailov, had extraordinary power within the government, often dealing independently with foreign governments and international programs. Throughout the 1990s, Mikhailov negotiated directly with Secretaries of Defense William Perry and William Cohen, and with Secretaries of Energy Hazel O'Leary and William Richardson. In Minister Mikhailov's view, the 1993 HEU Agreement was paramount. It provided

financial incentives for MinAtom to destroy hundreds of tons of weapons-grade HEU materials, it gave employment to thousands of Russian nuclear workers and each year it returned hundreds of millions of dollars to finance the declining Russian nuclear complex.<sup>109</sup> By contrast, the American-funded and constructed fissile material storage facility at Mayak not only came with conditions on its use and monitoring; there were new operational costs, and suspicions in some quarters that during the construction process Russian nuclear security had been compromised. Further, after 2002 a deep chill had developed in relations between Russia and the United States, a development that reinforced the state's nationalistic tendencies. For these reasons, when the Ministry of Atomic Energy officials accepted the new, modern storage facility, it made no commitments or promises to place fissile materials there.

The other question was why U.S. officials decided to "walk" away from the finished Mayak project, and then continue to press for a signed transparency agreement. The United States had a variety of reasons. Across Russia, there were a large array of U.S. CTR projects that were providing the Russian government, its defense ministry, chemical agencies and biological institutes with major programs and projects. There were continuing projects to provide security enhancements at the Ministry of Defense's nuclear weapons storage sites; projects for equipping and funding the transportation of nuclear warheads to dismantlement facilities and consolidated storage sites; long-running programs providing equipment and funding for eliminating ICBM missiles, silos, launchers and support facilities; other programs that funded dismantling SLBMs and the ballistic missile nuclear submarines; and smaller projects that funded dismantling and elimination of strategic bombers. In addition, there were new CTR programs just getting underway that provided equipment for improving biosecurity and biosafety at several Russian centers for virology and biotechnology. Another CTR program was funding construction of a large-scale chemical weapons disposal facility at Shchuch'ye. Consequently, the fissile storage materials facility at Mayak was but one of many assistance projects across Russia.

Another unrelated, but equally if not more important factor in the fall 2003 was the U.S. war in Iraq. Six months earlier an American led coalition had defeated Saddam Hussein and the Iraqi Army, but now 160,000 American military forces remained as part of the occupation force.

Beginning in October all across Iraq, sectarian violence threatened the stability of the provisional government and undermined the security of the American occupation. For Secretary Rumsfeld, Deputy Secretary Wolfowitz and other senior leaders, the war in Iraq subsumed all other issues, including the turnover of a fissile materials storage facility constructed in obscure closed city in the far-away southern Urals of Russia. For American policy officials, the decision was less one of “walking” away than “moving on” to more pressing war issues and events. Even after the decision, however, U.S. CTR officials continued to press Russian officials for a signed transparency agreement.

The Mayak imbroglio served as the contextual backdrop as Russian and American CTR officials worked through hundreds of other issues associated with another large-scale cooperative construction project in Russia – the Chemical Weapons Disposal Facility at Shchuch’ye. This project emerged in the mid and late 1990s as the United States’ major contribution to Russia’s chemical weapons destruction program.

## Russia’s Chemical Weapons Destruction Program

During the Cold War, the Soviet Union and the United States amassed the world’s largest arsenals of chemical weapons. Soviet scientists weaponized blister agents such as lewisite, sulphur and mustard gas, and nerve agents such as sarin, soman and V-type nerve agents, placing them into millions of artillery shells and thousands of short-range missiles, and aerial bombs. Extremely lethal, even in the smallest quantities, the total stockpile of the Soviet Union’s chemical weapons exceeded 44,000 tons. The Russian government inherited these weapons and chemical agents and the CW plants and chemical institutes that produced them. In spring 1992, President Yeltsin declared that chemical weapons were dangerous and obsolete and that he intended to sign the United Nations Chemical Weapons Convention, then in the final stages of negotiations. As a result, CW destruction quickly emerged as a potential project during the initial bilateral American-Russian discussions over the scope of Nunn-Lugar assistance. In July 1992, Russian and American officials signed an implementing agreement for \$25 million CW destruction assistance.<sup>110</sup>

Beyond this agreement, little was accomplished during the next few years. Since the Yeltsin government did

not develop a comprehensive, national CW destruction plan, there were no fixed ministerial and organizational responsibilities, no legal liability statutes, no annual budgets, nor any governmental policies for securing approvals from the local governments where the dangerous chemical weapons were stored and would be destroyed. Instead, bureaucratic infighting and ministerial confusion reigned. When Anatoly Kuntsevich, director of the Presidential Committee on Chemical Disarmament, declared he would lead all bilateral negotiations and develop and manage the Russian CW destruction programs, his authority was challenged, immediately. Colonel General Stanislav Petrov, commander of the Russian Army’s Chemical Weapons Command, which maintained and controlled the nation’s 4.5 million CW munitions, its storage depots and destruction sites asserted the primacy of the Ministry of Defense in planning, scheduling, funding and approving disposal technologies. Until the Yeltsin government resolved these internal disputes, bilateral negotiations on U.S. CTR assistance programs remained at a standstill.<sup>111</sup>

While the bickering between committees, command, and agencies of his government continued, President Yeltsin signed the Chemical Weapons Convention (CWC) in Paris in 1993.<sup>112</sup> That treaty required all signatory parties to destroy their CW stockpiles no later than 2012. As of January 1997, 106 nations had signed the CWC treaty, 65 had ratified it, and four states – Russia, United States, India and South Korea – declared existing chemical weapons stockpiles.<sup>113</sup> When the Russian Duma ratified the treaty in November 1997, the government declared it had approximately 44,000 tons of chemical weapons. On ratifying the treaty in April 1997, the United States declared its CW stockpile at approximately 30,000 tons. Combined, the two nations held 90 percent of the world’s existing chemical weapons.

Since destruction of declared national chemical weapons stockpiles was a treaty objective, the CWC protocols were explicit in defining categories of dangerous chemical weapons, in authorizing specific destruction methodologies, and in establishing destruction timelines, national reporting requirements and environmental and safety standards. The treaty included national obligations to accepting on-site inspections by UN chemical weapons inspectors to verify destruction methods and quantity of agents and weapons actually destroyed. In 1996, Russia declared to the UN’s

treaty implementation organization, Organization for the Prohibition of Chemical Weapons (OPCW), locations and quantities of its chemical weapons stockpiles:

At that time President Yeltsin approved the first comprehensive program, “Destruction of Chemical Weapons Stockpiles,” and Russian officials estimated the total cost would be \$5 billion.<sup>114</sup> Two years later in 1997, the Russian government developed and submitted a comprehensive destruction plan to the United Nations treaty implementation organization, and in November the Duma enacted the national law of ratification. Together, the comprehensive national plan and ratification law provided the legal basis for all subsequent CW destruction policies and programs. Under the national plan, two Russian ministries and a presidential committee had primary responsibility for planning, conducting and financing destruction of the nation’s CW stockpiles. The Ministry of Defense, Ministry of Finance, and the President’s Committee on Disarmament of Chemical and Biological Weapons all vied for power, with the Defense ministry predominant in most of the critical decisions. Russia’s first national CW destruction plan outlined a sequence for eliminating blister agents stored at Gorny and Kambarka first, and then destroying chemical weapons munitions at the remaining five locations, starting at Kizner and Shchuch’ye.

A series of assumptions were embedded within the Russian government’s national CW destruction plan and

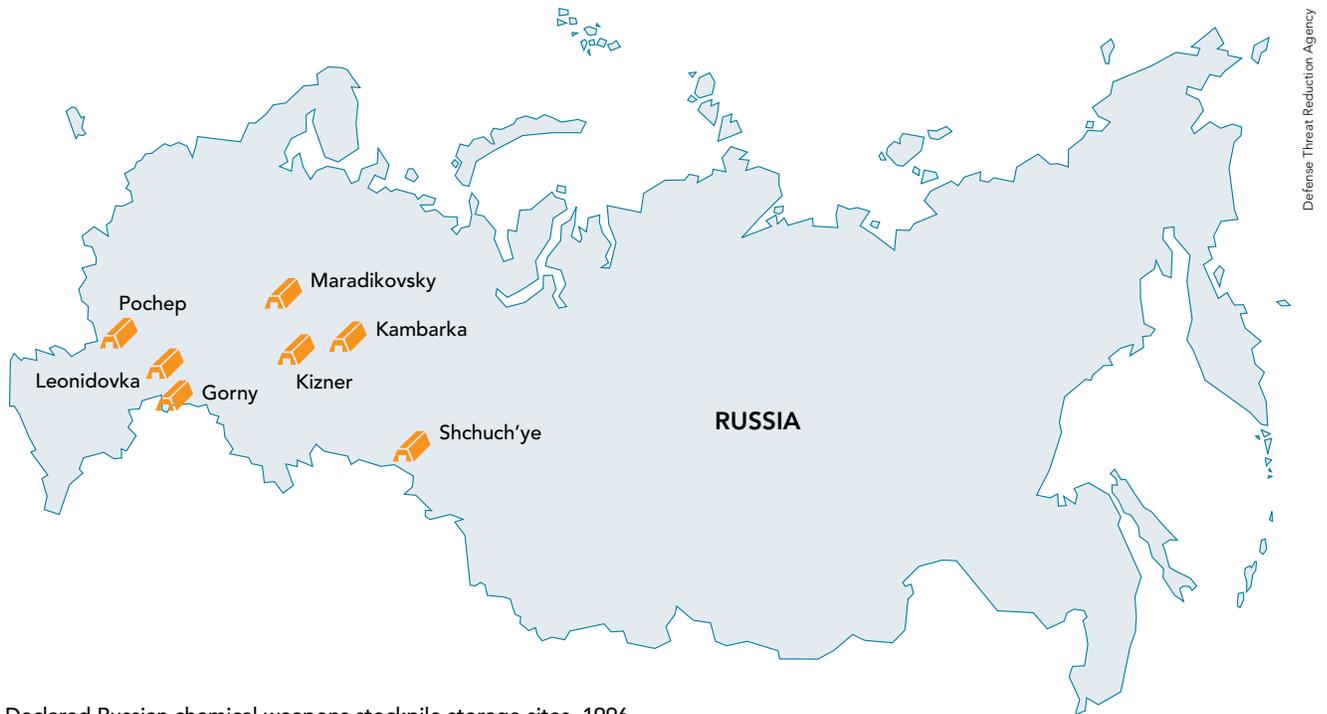
ratification legislation. Overarching every aspect was the assumption that the Russian government had accepted responsibility for destroying all 44,000 tons of its stockpiled chemical weapons. Destruction would be in accordance with the provisions and protocols of the CWC Treaty, and it would be done within the treaty’s time schedules. The Russian government stated it would use a treaty-authorized method of CW destruction; that it would destroy the toxic chemical agents at each of the seven disposal sites; and that there would be no transportation of CW munitions across Russian roads or rails from one site to another. In addition, the Yeltsin government declared it would fund local infrastructure projects, schools, roads and housing for the permanent residence of local people at all seven chemical weapons disposal sites. However the government could not afford to destroy these massive weapon stockpiles; consequently the Yeltsin government declared Russia would need foreign assistance, in addition to American and German donations it already received.<sup>115</sup>

Despite the appeal to other national governments, the United States and Germany remained the principal nations working with Russian ministries in negotiating, defining, funding and carrying out cooperative CW destruction projects. Within the U.S. government, Harold P. Smith, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs, emerged as the major proponent for assisting Russia in destruction of its massive CW stockpiles.

Table 9.1 - Declared Russian CW Stockpile Storage Sites, 1996

Location	CW type	Metric Tons (Tons)
Kambarka	lewisite (blister agent)	~6,349 (6998)
Gorny	lewisite, sulphur, mustard (blister agent)	~1,142 (1258)
Kizner	sarin, soman, V-type, lewisite (nerve agents)	~5,745 (6332)
Maradikovskiy	sarin, soman, V-type, and mustard (nerve agents)	~6,890 (7594)
Pochep	sarin, soman, V-type (nerve agents)	~7,489 (8255)
Leonidovka	sarin, soman, V-type (nerve agents)	~6,885 (7589)
Shchuch’ye	sarin, soman, V-type (nerve agents)	~5,457 (6015)

Source: Russian Federation, *Special Federal Program, to Preparatory Commission, OPCW, 25 June 1996.*



Declared Russian chemical weapons stockpile storage sites, 1996

Smith believed, and testified to Congress, that proliferation of Russia's chemical and nuclear weapons could pose major security problems for the United States and that assisting in destruction of the CW stockpiles would significantly reduce the chemical weapons threat.<sup>116</sup> While Defense Department policy officials always considered Russia's chemical munitions as less of a threat than its excess nuclear weapons, CW destruction endured as an important the U.S. CTR program objectives for more than a decade and a half.<sup>117</sup>

General Petrov and Russian chemical experts had selected a two-step process known as "neutralization-bituminization" for eliminating CW nerve agents. While authorized in the CWC treaty protocols, this process had never been tested. Smith and Kevin J. Flamm, director of CW destruction in the CTR program office, funded a project in 1995 that would test and evaluate the Russian-proposed two-step process. At no point did American officials pledge to eliminate the Russian Federation's entire chemical weapons stockpile, instead they wanted to provide Russian officials with a starting point, one that had been tested scientifically and technically.<sup>118</sup> Russian experts insisted the process was safe, ecologically secure and that some commercial chemical byproducts could be extracted. However, these assertions were based on projections from laboratory experiments.

No operational CW destruction plant used the proposed neutralization-bituminization elimination process; none in Russia or any other nation. In the United States elimination of CW stockpiles had been assigned to the Army Chemical Command, which planned to use controlled burning of the toxic chemicals in large, sealed incinerators that were constantly monitored for effluents.<sup>119</sup> During the 1990s the Army began demilitarizing and destroying the nation's CW stockpiles and they learned that the CW demilitarization and destruction process was not only expensive and environmentally sensitive, but that it was extraordinarily sensitive in local communities and with the media.

Smith informed General Petrov that that the CTR program would not commit funds to design, build, or equip any Russian CW destruction plants until the neutralization-bituminization process had been thoroughly tested and evaluated. Following a meeting of Russian and American technical experts in January 1995, Flamm approved CTR funding for a specific series of Russian and American joint evaluation tests.<sup>120</sup> Those tests, planned and organized by Bechtel, were conducted jointly by scientists and engineers from the Battelle Memorial Institute and the Russian State Scientific Research Institute for Organic Chemistry and Technology. The first set of tests were carried out at

Edgewood Laboratories in Maryland, and then replicated in a laboratory at the Sartov Military Engineering College of Chemical Defense, using munitions-grade agents. Those tests confirmed the technical and scientific efficacy of using the Russian two-step method.

While this collaborative work was underway, Smith sought other ways to accelerate the CW destruction effort. During negotiations General Petrov recommended that the CTR program fund construction of a pilot CW destruction facility with enough capacity to destroy more than 550 tons of weaponized nerve agents. The Russian general recommended locating the new plant at Shchuch'ye. Later, Smith recalled that when negotiations began the U.S. objective was to achieve a maximum reduction in the military CW threat against American forces stationed in Europe, with a minimum expenditure of time and money. To achieve its objective, the U.S. offered that the CTR program would purchase several large incinerators and deliver them to Russian chemical weapons storage sites so that the burning of toxic substances could begin almost immediately. When Russian officials rejected that concept, the Americans proposed eliminating Russian tactical missiles with persistent nerve agents that could be launched quickly and detonated in the atmosphere. Once again the Russian response was "Nyet." Finally, U.S. officials insisted the proposed pilot CW destruction facility be built at a site with established power, water, roads and rail infrastructure, and a pool of skilled workers. That too was rejected. As negotiations concluded General Petrov held firm to Russia's decision to place the American-funded pilot plant at Shchuch'ye. Summing up his experiences in negotiating with his Russian partners, Smith stated publically: "It is not an exaggeration to claim that the U.S. position was rejected *in toto*."<sup>121</sup>

Shchuch'ye was located in the Kurgan region of western Siberia, some 630 miles southeast of Moscow. The chemical weapons depot stored 1.9 million artillery shells, approximately 600 rocket and missile warheads, and 6,000 tons of nerve agents. The weapons, without burster charges, were stored in long, low wood and metal sheds surrounded by fences and barbed wire, but the security system offered little protection against fire or natural disasters.<sup>122</sup> Except for the poorly paid military guards, few people lived in the vicinity. These weapons posed an extreme danger because not only were most of the artillery shells small enough to allow easy transport in suitcases or small containers, but

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## Russian Assumptions

- ★ Accepted responsibility complete destruction of CW stockpile
  - ★ Destruction to be in accord with CWC Treaty
  - ★ No transportation of CW materials across Russia
  - ★ Foreign assistance to be solicited
- 

their detonation mechanisms were so simple that thieves or terrorists could fabricate them without difficulty. When U.S. Senator Lugar visited the site he remarked, "This is the kind of stuff, at Shchuch'ye that (terrorists) are after. We have an opportunity to get rid of it, and we're not moving forward."<sup>123</sup> This terrorist fear and Secretary Perry's desire to assist the Russian government with specific CW destruction projects, at last provided the impetus for Smith and Petrov to sign a CTR implementing agreement for U.S. assistance to the Russian Chemical Weapons Destruction Program in mid-July 1996. The agreement committed both governments to cooperate in designing, building and equipping the first Russian CW destruction complex near Shchuch'ye to eliminate nerve agents stored in nearly two million artillery shells and warheads.

## A journey of innumerable twists

With these framework agreement and decisions in place, the Shchuch'ye project began to take shape. Within a few months, the U.S. Army's Corps of Engineers awarded a contract for engineering management support to Parsons Corporation, a large American construction and engineering firm. The company had decades of experience designing and constructing chemical weapons destruction facilities in the United States. Within weeks, Parsons had established a small team in Moscow and initiated technical negotiations with the Russian Ministry of Defense and the Russian chemical institutes. As the main U.S. contractor, Parsons worked with Russian chemical experts at scientific institutes and Russian military planners and engineers on expanding the agreed upon chemical agent destruction process to an industrial

scale, developing a munitions destruction process line for a pilot plant, and designing the large-scale chemical weapons destruction facility at Shchuch'ye.<sup>124</sup> Parsons subcontracted with American companies and university technical institutes and with Russian firms and chemical institutes.

Because of the scientific, technical, environmental and political uncertainties involved with such a complex project, Congress restricted the authorization of CTR funding to planning and design activities only. Another American firm, Bechtel, was already working with Russian officials developing a comprehensive implementation plan for the entire CW destruction program. This included working with Russian lawyers and experts on land allocation documents, as required by Russian law, to secure a land deed and construction permits for the new deconstruction plant Shchuch'ye from the local government in the Kurgan Oblast. Anticipating that public hearings would be announced and held in the Kurgan region, Bechtel contracted with the American nonprofit, Global Green, and the Russian firm,

Green Cross, for assistance. The tentative schedule anticipated that the American contractor would receive construction permits in 1999, with construction being initiated during the next year, and project completion projected for late 2004.<sup>125</sup>

To coordinate the American effort, Smith directed that a new CW Destruction Office be established in Moscow. There, CTR staff officers would coordinate the myriad issues, plans, designs, schedules and requests for visits from the U.S. Defense Department and its contractors with the Russian Ministry of Foreign Affairs and the Ministry of Defense. In numerous ways, planning, and securing approvals for designing and constructing the CW destruction facility at Shchuch'ye became one of the most complex of all American-Russian CTR cooperative assistance projects.<sup>126</sup> The coordination effort became even more complicated when U.S. Defense Department and Russian Ministry of Defense officials signed another CW implementing agreement in June 1998, obligating funds and authorizing demilitarization of the OAO Khimpron chemical weapons production



Defense Threat Reduction Agency

Vladimir Putin (l.) and Harold P. Smith, Jr. (r.)

plant in Volgograd and at Plant No. 4 OAO Khimpron in Novocheboksarsk, two of Russia's former chemical weapons production facilities.

Following approval of the Russian Federation's plans for the plant's destruction by the United Nations Organization for the Prohibition of Chemical Weapons (OPCW), CTR program managers initiated the two projects in 1998. In Volgograd and Novocheboksarsk, American CTR program managers and U.S. and Russian contractors developed plans to decontaminate, dismantle and destroy specialized equipment and facilities used in the production, transfer and storage of chemical agents and weapons.<sup>127</sup> Decontamination of the lethal chemicals' residue required using on-site newly designed, fabricated and installed thermal treatment units.<sup>128</sup> Another CTR funded CW project in Russia provided equipment and systems for a new central chemical weapons destruction analytical laboratory in Moscow. This modern laboratory, along with three mobile analytical laboratories, also provided to the institute by the CTR program, would

be used by Russian scientists to develop CW agent analytical methods and procedures for monitoring chemical weapons and agents at the destruction and storage sites. The labs would also serve as quality assurance and quality control centers for planned Russian CW stockpile destruction efforts.<sup>129</sup>

Even under the best of circumstances, managing and controlling large-scale construction and sensitive demilitarization projects, especially in a foreign nation, required constant engagement and extensive cooperation. American managerial methods, using contract instruments and personal interventions at multiple planning sessions and meetings, however, clashed repeatedly with Russian methods of controlling projects through command-leadership management and a bureaucratic reluctance by subordinates to surface issues in the bilateral meetings. As Vice Admiral Ashot A. Sarkisov, director the Nuclear Safety Institute of the Russian Academy of Science, observed "[T]he culture of the Russian bureaucracy is much more personal than in the U.S."<sup>130</sup> Americans, he remarked, seemed to work through



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Schematic of Chemical Weapons Destruction Facility, Shchuch'ye

contracts, plans, documents and innumerable meetings. Almost inevitably, the divergent managerial styles clashed repeatedly on these multi-year, multi-million dollar CW destruction projects. When American program managers and contractors submitted plans and design documents, Russian responses were often late, and when delivered, incomplete. When American project schedules were presented, they were repeatedly revised, forcing delays. Requests for technical data frequently went unanswered and U.S. officials grew increasingly frustrated. At one point, there were 11 Russian government ministries and committees reviewing and making decisions on the nation's CW destruction program.

Smith, who had long experience managing and evaluating large-scale scientific and technical projects and great empathy and respect for Russia and its culture, published an article in 1998 that evaluated the American-Russian CW demilitarization programs. He concluded that it was a mystery why Russian officials had been so "obdurate."<sup>131</sup> On a fact finding mission to Russia, U.S. Congressional investigators found little evidence of progress, and worse, few specific financial commitments by the Russian government to the CW destruction program. Their report concluded that there was a distinct possibility of "potentially" large cost increases over the \$900 million CTR cost estimate.<sup>132</sup> Because of that potential, investigators recommended that Congress instruct the Secretary of Defense in its annual CTR authorization bill not to obligate any funds for construction until it could certify that an accurate cost, schedule and program had been developed. Congress heeded that recommendation and directed Secretary of Defense Cohen to limit funds and projects for the CW pilot destruction facility at Shchuch'ye to planning and design activities only.<sup>133</sup>

For two years, 1999 and 2000, the U.S. House of Representatives blocked all CTR funding for the Shchuch'ye CW destruction facility.<sup>134</sup> The reason cited was recent Congressional reports that emphasized the Russian government's lack of commitment to funding CW destruction since there were no funds in the national budget for financing infrastructure projects at Shchuch'ye. The Russian government, investigators reported, had not funded any other Russian CW destruction facilities, and had failed to provide critical information to U.S. program managers about chemical weapons slated for destruction.<sup>135</sup> Combined with these specific objections were political arguments against using American taxpayer funds to eliminate old, obsolete

Russian chemical weapons. In addition to the House of Representatives blocking all CW construction funding, in 1999 the U.S. Senate placed requirements on the Russian government before it would approve any additional funds for the project. In May the following year, Russia added to suspicions in Congress, when it missed an important CWC Treaty deadline for destruction of one percent of its "Category 1" chemical weapons within three years of treaty ratification. General Petrov blamed an "insufficiency of financing" by the government for the CW destruction program and explained, "On the whole we are about four years behind the plan."<sup>136</sup> At this point, many observers believed that Russia's CW destruction effort, in spite of its treaty obligations and presidential declarations, was doomed to failure.

## **Restructuring and elevating Russia's CW destruction programs**

In 2001, the situation changed dramatically when newly elected Russian President Vladimir Putin directed a restructuring and streamlining of the entire Russian CW destruction program. Instead of the Ministry of Defense controlling it, Putin assigned leadership and program management to the Federal Munitions Agency for all CW destruction matters. Led by Dr. Zinovy Pak, an engineer and senior civilian, and Colonel General Viktor I. Kholstov, as deputy director, the agency was designated as the Russian National Authority to the United Nations' OPCW.<sup>137</sup> In the Russian Security Council, President Putin stated that chemical weapons destruction was a "priority" for the government and to prove it, he established a new State Committee on Chemical Disarmament, which consisted of representatives from each region where there were chemical weapons destruction sites. The commission's chairman was S.V. Kirienko, the presidential envoy to the Volga Federal District where four-fifths of the weapons were stored. Another organization, the Federal Directorate on Safety, Storage and Destruction of Chemical Weapons, led by Lieutenant General Valerii P. Kapashin, was responsible for safe operations at all destruction facilities. The Ministries of Foreign and Internal Affairs, the Federal Security Service, and the Office of the Prime Minister shared responsibility for other aspects of the CW destruction program. The Minister of Finance approved demilitarization funding at \$106 million annually, with \$25 million designated for Russian projects at Shchuch'ye.<sup>138</sup>

Director Pak developed a new comprehensive plan to destroy the nation's chemical weapons stockpiles by the CTW Treaty's deadline of 2012. Instead of destroying the toxic chemicals at seven separate sites, each with a new destruction facility, the new plan stipulated there would be only three destruction sites in Gorny, Kambarka and Shchuch'ye. Chemical weapons stored at the other sites would be transported to one of the three sites. To destroy the blister agents stored at Gorny and Kambarka, Russian officials worked closely with German engineers constructing new destruction facilities at Gorny. At Shchuch'ye, Pak's new plan dropped the previous concept of constructing houses, schools and infrastructure for the approximately 3,000 Russian construction workers and technicians, replacing it with a provision for temporary housing, shift work, and buses for transportation. In addition, Pak proposed expanding the design for the facility at Shchuch'ye from a destruction capacity of 550 to 880 tons. The new proposal envisioned constructing a second, identical CW destruction

facility at Shchuch'ye, financed by the Russian Federation and European nations. Combined, the two plants, when in full operation, would be capable of destroying more than 1,760 tons of nerve agents per year. If American CTR officials agreed, the two CW destruction facilities could be constructed simultaneously and be supported by the American-built industrial systems. If all parts of the new comprehensive plan were completed and operational, the Russian government would meet the 2012 treaty deadline for destroying its chemical weapons, and costs for the destruction would be reduced by thirty to fifty percent. In early July 2001, Russian Prime Minister Mikhail Kasyanov approved a resolution to accept Director Pak's new plan.<sup>139</sup>

With Putin's endorsement, Director Pak restructured the national CW destruction plan, and the Duma's financial commitment stimulated new international support, mainly from Great Britain and Italy. Then a cascade of support for Russia developed during and after the G-8 leaders' summit meeting in Kananaskis, Canada in June 2002.<sup>140</sup> There the



Russian President Vladimir Putin and U.S. President George W. Bush at the G-8 leaders summit meeting, June 2002

leaders of the eight largest industrial nations – Canada, France, Germany, Italy, Japan, Russia, United Kingdom and the United States – created the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction.<sup>141</sup> The leaders pledged to raise \$20 billion in the next 10 years to support specific projects, such as the destruction of chemical weapons in Russia. Still fresh were memories of Al Qaeda terrorist attacks on New York City and Washington, D.C. on September 11, 2001, and the G-8 leaders were only too aware of Osama Bin Laden’s desire to steal or buy nuclear, chemical and biological weapons. President Putin’s appeal for assistance in preventing proliferation, theft, diversion and accidents of WMD and related munitions was very timely. In their joint statement concluding the Kananaskis summit, the leaders pledged to support a series of cooperative projects with the Russian Federation. “Among our priority concerns,” they declared, “are the destruction of chemical weapons, the dismantlement of decommissioned nuclear submarines, the disposition of fissile nuclear materials, and the employment of former weapons scientists. We will commit to raise up to \$20 billion to support such projects over the next 10 years.”<sup>142</sup>

These G-8 commitments also stimulated other nations to join the global partnership, and pledge additional funds for the specific projects with the Russian Federation. Within two years, 14 additional nations – Australia, Belgium, Czech Republic, Denmark, European Union, Finland, Ireland, Netherlands, New Zealand, Norway, Poland, South Korea, Sweden and Switzerland – pledged to fund and contribute to disarmament efforts in Russia.<sup>143</sup> Among the industrial nations, Canada pledged \$650 million, United Kingdom \$750 million, Germany \$1.5 billion, the European Union \$1 billion and Japan \$200 million to the Global Partnership.<sup>144</sup> At the Kananaskis summit, President Bush committed the United States to contributing \$10 billion over 10 years.<sup>145</sup> Securing and destroying obsolete weapons of mass destruction had emerged as a new anti-terrorist and nonproliferation security objective for many nations. Widely recognized at the time, the American CTR effort with the Russian Federation was singled out as a model program of successful cooperation and for meeting arms control treaty reductions.

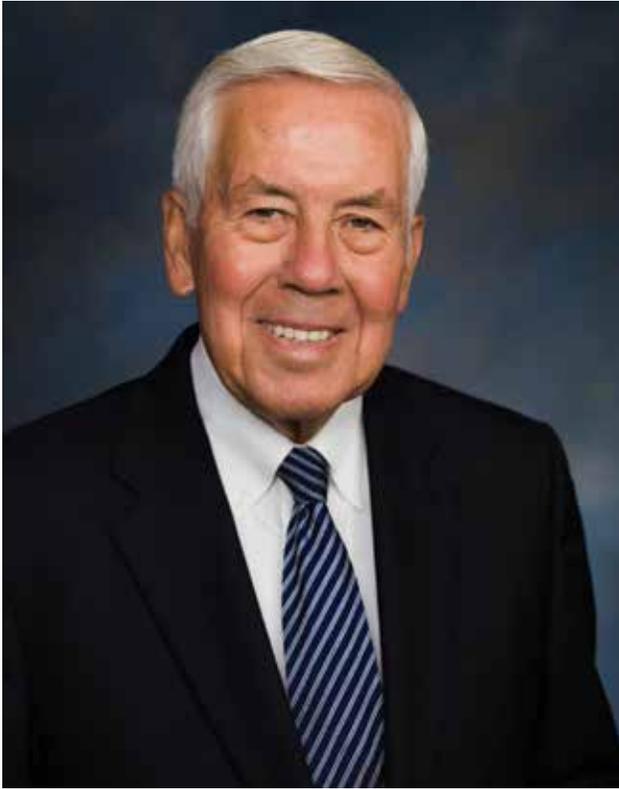
When Director Pak opened the first chemical weapons destruction plant at Gornyy in August 2002, he announced that by December they would start the elimination process for destroying 1,258 tons of mustard gas, sulphur and lewisite agents.<sup>146</sup> When the plant began operations on schedule,

Pak declared that the Russian government had budgeted \$172 million for the destruction of chemical weapons.<sup>147</sup> In the wake of these developments in Russia and with other foreign nations, the U.S. Government decided to proceed. President Bush signed the 2003 Defense Authorization Act, which authorized him to waive the congressionally mandated requirements on CTR programs with the Russian Federation.<sup>148</sup> That decision reversed the House of Representatives’ refusal to obligate funds for construction of the chemical weapons destruction facility at Shchuch’ye, and it changed the President’s decision to certify that Russia was in compliance with the CWC.

Clearly, a corner had been turned. Congress released CTR funds for construction of the CW destruction facility at Shchuch’ye and appropriated \$50 million in 2002, \$132.9 million in 2003 and \$200 million in 2004 for the large-scale construction project.<sup>149</sup> Construction began straightaway, with groundbreaking on the initial building’s foundation in April, 2003. At this point, the United States had agreed to build a modern chemical weapons destruction facility to destroy Russia’s 1.9 million nerve agent-filled, man-portable, tube and rocket artillery shells and bulk-filled rocket and missile warheads stored at Shchuch’ye. The total amount of chemical weapons was approximately 6,006 tons of nerve agents. Paul McNelly, U.S. CTR program manager, explained that during the long five-year design phase, the project had included process development, process and facility design, construction, equipment acquisition, delivery, and installation, systems integration, training and facility start-up. The estimated cost was \$1 billion, with initial operations projected to begin in spring of 2008.<sup>150</sup> The actual construction of the complex at Shchuch’ye was fraught with major issues. Nevertheless, after 2002 there was new confidence among American, Russian and international officials that the chemical weapons destruction facility would, in fact be constructed and become operational.

## Senator Lugar’s perspective and vision

Just as President Bush signed the Defense Authorization Act in December 2002, Senator Lugar published his vision for the future of U.S. nonproliferation policy.<sup>151</sup> As coauthor of the original Nunn-Lugar legislation in 1991, Lugar led the effort in the U.S. Senate year after year in shaping, directing and authorizing all facets of the multi-national, multi-billion



Office of Senator Richard Lugar

Senator Richard G. Lugar

CTR program. He traveled to Russia frequently, visiting the projects, meeting with Russian military and civilian officials, and listening to Russian and American program managers' issues and observations. Lugar explained that his vision was based on 11 years experience observing the development of a sustained American effort to "assist the states of the former Soviet Union in safeguarding and destroying their enormous stockpiles of weapons of mass destruction."<sup>152</sup>

By 2002, the program had assisted in deactivation of more than 6,000 nuclear warheads and elimination of hundreds of bombers, missiles and submarines. CTR funds and direct assistance had been influential in persuading Ukraine, Kazakhstan and Belarus to give up their nuclear weapons and accede to the UN Nonproliferation Treaty. The program broadened in the mid-1990s to encompass protecting and safeguarding nuclear warheads and fissile materials, securing and destroying chemical weapons stockpiles, and employing tens of thousands of Russian weapons scientists on collaborative projects. Lugar praised the G-8 Global Partnership for pledging \$20 billion over the next ten years to assist nations in securing and destroying their WMD stockpiles, declaring that if it were fully

implemented it would double the resources being expended in Russia on the broad range of CTR programs.

Using the G-8 nations' commitment to assist Russia as the focal point, Senator Lugar advocated that the United States and the international community should apply Nunn-Lugar concepts outside the nuclear nations of the former Soviet Union, working with other nations where WMD existed. Lugar thought that assistance programs could move beyond weapons dismantlement projects to encompass counterterrorism, nuclear safety and environmental dangers. "Today, we lack even minimal international confidence about many proliferation risks," he concluded. He called for a new coalition of nations to work with those nations seeking help destroying weapons or dangerous materials. Such an international coalition could develop international standards of accountability for protecting and handling nuclear materials and deadly biological pathogens. It could work on multinational agreements to assist victims of nuclear, biological or chemical terrorism. Lugar developed a "Top 10 List" of the most pressing WMD nonproliferation projects worldwide:<sup>153</sup>

**1. Chemical Weapons:** The United States and Russia ratified the Chemical Weapons Convention in 1997. Today, more than five years later, Russia has barely begun to eliminate its estimated 40,000-metric ton stockpile. ... Shchuch'ye and the Russian chemical weapon stockpile represent one of the greatest proliferation threats in the world.

**2. Biological Weapons:** The United States must continue to work closely with Russia to assist in the conversion of former biological weapons facilities. ... Opening these facilities, ensuring that their scientists do not transfer their weapons knowledge, and providing necessary security upgrades must be high on any list of priorities.

**3. Tactical Nuclear Weapons:** U.S.-Russian cooperation must move beyond strategic nuclear systems into the tactical weapons arena. Tactical warheads are more portable ... many are not secured at the same level as strategic systems. We must establish mutual confidence in the quantity, status, storage, and security of tactical nuclear weapons.

**4. Employment of Former Weapons Scientists:** Tens of thousands of Russian weapons scientists have been employed

under the auspices of the State Department's ISTC program and the Department of Energy's Initiatives for Proliferation Prevention. ... If Russian weapons experts are placed in a position of economic desperation or bankruptcy, the possibility that at least some will sell their services elsewhere is high.

**5. Material Protection, Control, and Accounting:** After eight years of close cooperation and considerable effort, 40 percent of the facilities housing nuclear materials in Russia have received security improvements through U.S. assistance. ... Russia should continue to consolidate materials in fewer locations, but if facilities housing nuclear weapons materials are vulnerable, they must receive upgrades as quickly as possible ....

**6. Radioactive Sources:** The Soviet Union produced hundreds of small nuclear generators, known as radioisotope thermal generators (RTGs). ... These generators are very dangerous because they hold nuclear material that might be used in a radiological weapon, or "dirty bomb." The Russian government does not have an accurate accounting.... We must find these units, secure them, and remove the dangerous materials.

**7. Shutdown of Plutonium-Producing Reactors:** There are three nuclear reactors in Siberia producing a total of 1.5 metric tons of weapons-grade plutonium per year as a byproduct of their operation. Russia will not shut down these reactors... As we continue to safeguard and eliminate nuclear material in Russia, we must also take steps to ensure that no additional weapons-grade material is created.

**8. Plutonium Disposition:** The United States and Russia have agreed to dispose of 34 metric tons of weapons-grade plutonium. ...The fabrication processes will require significant investments by both sides in new facilities. An estimated \$2 billion will be needed to build and implement the Russian effort.

**9. Nonstrategic Submarines:** Each time I visit Russian shipyards, I am startled by the enormity of the task that lies before us in the area of submarine dismantlement. ...There are important nonproliferation, security, and environmental benefits to the timely dismantlement of conventional

submarines. Many carry cruise missiles that could prove valuable to the missile programs of rogue nations.

**10. Reactor Safety:** The United States and its allies must work together with Russia and other states of the former Soviet Union and elsewhere to convert reactors that currently use weapons-grade material to burn less-enriched fuel.

Senator Lugar concluded: "If we are to block terrorist acquisition of weapons of mass destruction, then bipartisan vision, statesmanship and patience will be required over many years."<sup>154</sup> The senator's vision was not shared throughout the Bush Administration. In fact, Department of Defense officials, as seen in the next chapter, took the CTR program in an entirely different direction.

## Endnotes

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<sup>1</sup> Interview with General Colonel (Retired) Yevgeny P. Maslin, Director, 12<sup>th</sup> Main Directorate, General Staff, Ministry of Defense, Russian Federation with Joseph P. Harahan, Historian, DTRA, 18 January 2005, Moscow, Russia.

<sup>2</sup> Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Secretary of Defense for CTR, 1994-1997, U.S. Department of Defense, with Joseph P. Harahan, DTRA, 31 March 2004.

<sup>3</sup> Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of the Russian Federation Concerning Cooperation in Nuclear Weapons Storage Security Through Provisions of Materials, Services, and Related Training, Moscow, Russia, 3 April 1995.

<sup>4</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress 1998, pp. IV-32-33.

<sup>5</sup> Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Washington, 20 July 2004.

<sup>6</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress 1998, pp. IV-32-33.

<sup>7</sup> *Ibid.*, IV-33-34.

<sup>8</sup> Yevgeny Maslin, "The CTR Program and Russia's National Security Interests," in Ivan Safranchuk, editor, *The Cooperative Threat Reduction Program: How Efficient?*, PIR Center, Moscow, 2000, p 8.

<sup>9</sup> Interview, Major General Roland Lajoie, U.S. Army (retired), Deputy Secretary of Defense for CTR, 1994-1997, U.S. Department of Defense, with Joseph P. Harahan, DTRA, 31 March 2004;

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Interview, Harold P. Smith, Assistant secretary of Defense for Nuclear, Chemical, and Biological Programs, 1993-1998, with Joseph P. Harahan, Historian, DTRA, 14 December 2001; Interview, Harold P. Smith, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs, 1993-1998, with Joseph P. Harahan, Historian, DTRA, 14 December 2001; and Interview, Laura S.H. Holgate, Vice President for Russia and NIS Programs, Nuclear Threat Initiative, with Joseph P. Harahan, Historian, Defense Threat Reduction Agency, Washington, D.C., 20 June 2002.

<sup>10</sup> Briefing, "CTR Russian Weapons of Mass Destruction (WMD) Security Program," by William M. Moon, Program Manager, Nuclear Weapons Safety and Security Program, at NDIA Security Division Symposium & Exhibition, Reston, Virginia, 27 June 2002, p. 14.

<sup>11</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress 1998, pp. IV-30-31.

<sup>12</sup> See Matthew Bunn, "Securing Nuclear Warheads and Materials," August 2002, in Nuclear Threat Initiative: Securing the Bomb, at <http://www.nti.org/about/projects/Securing-bomb/> accessed on 14 December 2011.

<sup>13</sup> Bill Moon, CTR Program Manager, CTR Division, "Talking Points on Nuclear Weapons Storage and Transportation Security Projects," NWSA, 16 October 1997. See also, Statement of Work, CT Directorate, Procurement of Safety and Security Support equipment, Technical Test Bed (SATC) and Site Security Enhancements for the Russian Federation, Ministry of Defense Nuclear Weapons Storage Sites, 1997.

<sup>14</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress 1998, pp. IV-30-31. Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, Cooperative Threat Reduction Directorate, DTRA, with J. P. Harahan, Historian, DTRA, Washington, 20 July 2004.

<sup>15</sup> Interview, William Moon, Chief, Safe, Secure, Nuclear Weapons Division, CTR Directorate, DTRA, with Joseph Harahan, Historian, DTRA, Washington, 20 July 2004; and Bill Moon, CTR Program Manager, CTR Division, "Talking Points on Nuclear Weapons Storage and Transportation Security Projects," NWSA, 16 October 1997.

<sup>16</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress 1998, pp. IV-30-31; DoD Report, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2000, pp. IV-34-35.

<sup>17</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress 1998, pp. IV-29-30.

<sup>18</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress 1998, pp. IV-29-30.

<sup>19</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2001, pp. 19-20.

<sup>20</sup> Ibid., p. 20.

<sup>21</sup> Report, Cooperative Threat Reduction Annual Report to Congress FY 2003, pp. III 21-22.

<sup>22</sup> Ibid.

<sup>23</sup> For this concept, I am grateful to Igor Khripunov and James Holmes, editors, *Nuclear Security Culture: The Case of Russia*, Center of International Trade and Security, University of Georgia, 2004.

<sup>24</sup> Ibid. See, Interview with General Colonel (Retired) Yevgeny P. Maslin, Director, 12<sup>th</sup> Main Directorate, General Staff, Ministry of Defense, Russian Federation with Joseph P. Harahan, Historian, DTRA, 18 January 2005, Moscow, Russia.

<sup>25</sup> Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, Cooperative Threat Reduction Directorate, DTRA, with Joseph P. Harahan, DTRA, Washington, 20 July 2004; See also, Interview, Thomas E. Kuenning, Jr., Director Cooperative Threat Reduction Directorate, Defense Threat Reduction Agency with Dr. Joseph P. Harahan, Historian, Defense Threat Reduction Agency, 6 August 2004.

<sup>26</sup> Interview, General-Major (Retired) Vladimir Petrovich Frolov, Deputy Chief, 12<sup>th</sup> Main Directorate, General Staff, Ministry of Defense, Russian Federation, with Joseph P. Harahan, Historian, DTRA, Moscow, 24 January 2005.

<sup>27</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress 1998, pp. IV-30-31; DoD Report, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2000, pp. IV-34-35. Interview, General-Major (Retired) Vladimir Petrovich Frolov, Deputy Chief, 12<sup>th</sup> Main Directorate, General Staff, Ministry of Defense, Russian Federation, with Joseph P. Harahan, Historian, DTRA, Moscow, 24 January 2005, and Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, Cooperative Threat Reduction Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Washington, 20 July 2004.

<sup>28</sup> U.S. DoD News Release, "Secretary Cohen Tours Russian Defense Facility, Nuclear Weapons Security Projects at Sergeiv Posad, 13 February 1998.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid., DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress 1998, pp. IV-30-31; DoD Report, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2000, pp. IV-34-35.

<sup>31</sup> William Moon, CTR Program Manager, CTR Division, "Talking Points on Nuclear Weapons Storage and Transportation Security Projects," DSWA 16 October 1997.

<sup>32</sup> "Joint U.S.- Russia Nuclear Security Training Center Opens," United States Information System, Washington File, 1 November 1999, at [http://www.partnershipforglobalsecurity.org/PrinterFriendly.asp?Doc=11\\_03\\_99.html#2](http://www.partnershipforglobalsecurity.org/PrinterFriendly.asp?Doc=11_03_99.html#2) accessed on 14 December 2011.

<sup>33</sup> "Nuclear weapons Security Assessment and Training Center opens in Russia," *DTRA Connection*, December 1999. For the observation about General Valynkin see Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Washington, 20 July 2004.

<sup>34</sup> "Nuclear Weapons Security Assessment and Training Center opens in Russia," *DTRA Connection*, December 1999.

<sup>35</sup> Ibid.

<sup>36</sup> Interview, General-Major (Retired) Vladimir Petrovich Frolov, Deputy Chief, 12<sup>th</sup> Main Directorate, General Staff, Ministry of Defense, Russian Federation, with Joseph P. Harahan, Historian, DTRA, Moscow, 24 January 2005, and Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Washington, 20 July 2004.

<sup>37</sup> William Moon, "CTR Russian Weapons of Mass Destruction (WMD) Security Program," Briefing to the NDIA Security Division Program Symposium, Reston, Virginia, 27 June 2002.

<sup>38</sup> See Agreement Between the Department of Defense of the United States of America and the Ministry of Defense of the Russian Federation Concerning Cooperation in Nuclear Weapons Storage Security through Provision of Material, Services, and Related Training, dated 3 April 1995, amended 21 June 1995, 27 May 1996, 8 April 1997, 14 January 1999, 1 November 1999, 12 June 2000, and 19 September 2002 and extended 14 January 1999 and 25 January 2000. (Nuclear Weapons Storage Security Implementing Agreement)

<sup>39</sup> William Moon, "CTR Russian Weapons of Mass Destruction (WMD) Security Program," Briefing to the NDIA Security Division Program Symposium, Reston, Virginia, 27 June 2002. See also, DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress, FY 2003, pp. III-23-24.

<sup>40</sup> See Briefing, William Moon, Program Manager, CT Directorate, "CTR Nuclear Weapons Safety and Security Program," 2 August 2000.

<sup>41</sup> Briefing, CTR Directorate, DTRA, "Russia and the CTR Program," June 2002. See also, DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress, FY 2003, pp. III-22-23.

<sup>42</sup> See Mathew Bunn, "Securing Nuclear Warheads and Materials: Nuclear Warhead Security Upgrades," Nuclear Threat Initiative, Securing the Bomb Database at <http://www.nti.org/about/projects/Securing-bomb/> accessed on 14 December 2011.

<sup>43</sup> Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Washington, 20 July 2004, and Interview, Thomas E. Kuenning, Jr., Director Cooperative Threat Reduction Directorate, DTRA, with Dr. Joseph P. Harahan, Historian, DTRA, 6 August 2004.

<sup>44</sup> See "Securing Nuclear Warheads and Materials: Nuclear Warhead Security Upgrades."

<sup>45</sup> Statement of Robert Bell, NSC Advisor to the President, Transcript, "AWOL Arsenal," the NewsHour with Jim Lehrer, 19 March 1998 at [http://www.pbs.org/newshour/bb/military/jan-june98/nukes\\_3-19.html](http://www.pbs.org/newshour/bb/military/jan-june98/nukes_3-19.html) accessed on 14 December 2011.

<sup>46</sup> For a good factual account of this cooperative effort, see Morten Bremer Maerli, "U.S. Russian Naval Security Upgrades: Lessons Learned and Future Steps," in *Yademy Kontrol*, V.7. no. 4, PIR Center, Moscow, Russia, pp. 38-53.

<sup>47</sup> Ibid. See also "Securing Nuclear Warheads and Materials: Nuclear Warhead Security Upgrades."

<sup>48</sup> "Securing Nuclear Warheads and Materials: Nuclear Warhead Security Upgrades."

<sup>49</sup> Report DoD, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2001, pp. 20-22.

<sup>50</sup> "Securing Nuclear Warheads and Materials: Nuclear Warhead Security Upgrades."

<sup>51</sup> Alfred Goldberg and Sarandis Papadopoulos, and others, *Pentagon 9/11* (Office of the Secretary of Defense, Historical Office, Washington, 2007).

<sup>52</sup> Testimony, J.D. Crouch III, Assistant Secretary of Defense for International Security Policy, to the House Armed Services Committee, 4 March 2003.

<sup>53</sup> These developments are covered in Matthew Bunn's article "Securing Nuclear Warheads and Materials: Nuclear Warhead Security Upgrades," Nuclear Threat Initiative, Securing the Bomb Database at <http://www.nti.org/about/projects/Securing-bomb/> accessed on 14 December 2011.

<sup>54</sup> Interview, William M. Moon, Chief, Safe, Secure, Nuclear Weapons Division, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, Washington, 20 July 2004.

<sup>55</sup> William Moon, CTR Program Manager, CTR Division, "Talking Points on Nuclear Weapons Storage and Transportation Security Projects," DSWA, 16 October 1997.

<sup>56</sup> See Report DoD, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2001, pp. 22-23.

<sup>57</sup> Report DoD, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2006, pp. 43-44.

<sup>58</sup> Report DoD, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2001, pp. 22-23.

<sup>59</sup> Goldgeier and McFaul, *Power and Purpose: U.S. Policy Towards Russia after the Cold War*, pp. 241-244.

<sup>60</sup> President William Jefferson Clinton State of the Union Address, 19 January 1999, White House Office of the Press at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999\\_public\\_papers\\_vol1\\_text&docid=pap\\_text-44](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999_public_papers_vol1_text&docid=pap_text-44) accessed on 15 December 2011.

<sup>61</sup> "Russian Leadership Receptive to Continued CTR Programs", January 20, 1999, Nuclear Threat Initiative, Databases at [www.nti.org/db/nisprofs/russia/forasst/ctr/programs.htm](http://www.nti.org/db/nisprofs/russia/forasst/ctr/programs.htm) accessed on 15 December 2011.

<sup>62</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2001, p. 22.

<sup>63</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2003, pp. III-25-26.

<sup>64</sup> DoD Report, CTR Policy Office Cooperative Threat Reduction, Multi-Year Program Plan, FY 2001, p. 22.

<sup>65</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2003, pp. III-25-26.

<sup>66</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction, Multi-Year Program Plan, FY 2006, p. 43.

<sup>67</sup> See Briefing, William Moon, Program Manager, CT Directorate, "CTR Nuclear Weapons Safety and Security Program," 2 August 2000. Also see, Briefing, Commander Scott Crow, CT

Directorate, DTRA, "Railcar Maintenance and Procurement," March 2005.

<sup>68</sup> Statement of Reginald Bartholomew, Under Secretary of State for International Security, Department of State, to the U.S. Senate, Foreign Relations Committee, SH 102-510, 5 February 1992. For the diplomatic context see, James A. Baker, *The Politics of Diplomacy*, pp. 558-586, 588-613, 614-636; James Goldgeier and Michael McFaul, *Power and Purpose: U.S. Policy Toward Russia After the Cold War*, pp.18-40, 41-59.

<sup>69</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of Atomic Energy of the Russian Federation Concerning the Safe and Secure Transportation and Storage of Nuclear Weapons through the Provision of Fissile Materials Containers," Washington, D.C., 17 June 1992.

<sup>70</sup> Agreement Between the Department of Defense of the United States of America and the Ministry of the Russian Federation for Atomic Energy Concerning the Provision of Material, Services, and Training Relating to the Construction of a Safe, Secure, and Ecologically Sound Storage Facility for Fissile Material Derived from the Destruction of Nuclear Weapons, dated 2 September 1993, amended 20 June 1995, 6 September 1996, 9 April 1997, 26 May 1999, 15 September 1999 and 21 August 2000, and extended 27 January 1999. (Fissile Material Storage Facility Construction Implementing Agreement)

<sup>71</sup> Oleg Bukharin, "Minatom and Nuclear Threat Reduction Activities," in Shields and Potter, editors, *Dismantling the Cold War*, pp. 216-218.

<sup>72</sup> "Agreement between the Department of Defense of the United States of America and the Ministry of Atomic Energy Concerning Technical Assistance for the Design of a Safe, Secure, and Ecologically Sound Storage Facility for Fissile Material Derived from the Destruction of Nuclear Weapons," Washington, 5 October 1992.

<sup>73</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of Atomic Energy of the Russian Federation Concerning the Safe and Secure Transportation and Storage of Nuclear Weapons through the Provision of Fissile Materials Containers," Washington, D.C., 17 June 1992. See also, Briefing, Dr. John Birely, Assistant to the Secretary of Defense for Atomic Energy, 10 November 1993.

<sup>74</sup> Oleg Bukharin, "Minatom and Nuclear Threat Reduction Activities," in Shields and Potter, editors, *Dismantling the Cold War*, pp. 216-228; and Briefing, Dr. John Birely, Assistant to the Secretary of Defense for Atomic Energy, 10 November 1993.

<sup>75</sup> Bukharin, "Minatom and Nuclear Threat Reduction Activities," in *Dismantling the Cold War*, pp. 216-217.

<sup>76</sup> Report, "Mayak Production Association (PO Mayak)," in Nuclear Threat Initiative, Databases, Russia: Ozersk at [www.nti.org/db/nisprofs/russia/fissmat/pumayak/pomayak.htm](http://www.nti.org/db/nisprofs/russia/fissmat/pumayak/pomayak.htm) accessed 15 December 2011.

<sup>77</sup> Pavel Podvig, editor, *Russian Strategic Nuclear Forces*, pp. 94-97.

<sup>78</sup> Report, "Russia: Mayak Fissile Material Facilities," in Nuclear Threat Initiative, Russia Databases at [www.nti.org/db/nisprofs/](http://www.nti.org/db/nisprofs/)

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<sup>79</sup> "Agreement Between the Department of Defense of the United States of America and the Ministry of the Russian Federation for Atomic Energy Concerning the Provision of Material, Services, and Training Relating to the Construction of a Safe, Secure, and Ecologically Sound Storage Facility for Fissile Material Derived from the Destruction of Nuclear Weapons, dated September, April 9, 1997."

<sup>80</sup> Briefing, "Mayak Fissile Material Storage Facility," by Thomas R. Rutherford, Chief, Fissile Material Control Division, CTR Directorate, Defense Threat Reduction Agency, Department of Defense, October 2003. According to the U.S. Army Corps of Engineers business rules "a cost-plus-award-fee contract is a cost-reimbursement contract that provides for a fee consisting of (1) a base amount fixed at inception of the contract and (2) an award amount that the contractor may earn in whole or in part during performance and that is sufficient to provide motivation for excellence in such areas as quality, timeliness, technical ingenuity, and cost-effective management. The amount of the award fee to be paid is determined by the Government's judgmental evaluation of the contractor's performance in terms of the criteria stated in the contract. This determination and the methodology for determining the award fee are unilateral decisions made solely at the discretion of the Government." Definition adopted from USACE briefing Section 13: Cost Plus Award Fee Contracts, at [corpslakes.usace.army.mil/employees/omcontracts/pdfs/section13.pdf](http://corpslakes.usace.army.mil/employees/omcontracts/pdfs/section13.pdf) accessed on 8 December 2011.

<sup>81</sup> See GAO Report, Weapons of Mass Destruction: Status of Cooperative Threat Reduction Program, GAO/NSIAD-96-222, September 1996.

<sup>82</sup> Briefing, "Mayak Fissile Material Storage Facility," by Thomas R. Rutherford, Chief, Fissile Material Control Division, CTR Directorate, Defense Threat Reduction Agency, Department of Defense, October 2003.

<sup>83</sup> The U.S. official was Laura Holgate, OSD, cited in Report, "Russia: Mayak Fissile Material Facilities."

<sup>84</sup> "Russian Government in Debt to Mayak," 9 June 1997, in Nuclear Threat Initiative, Databases, "Russia: Ozersk" at [www.nti.org/db/nisprofs/russia/fissmat/pumayak/pomayak.htm](http://www.nti.org/db/nisprofs/russia/fissmat/pumayak/pomayak.htm) accessed on 15 December 2011.

<sup>85</sup> Matthew Bunn, "Securing Nuclear Warheads and Materials: Mayak Fissile Materials Storage Facility," Nuclear Threat Initiative, Securing the Bomb Database at <http://www.nti.org/about/projects/securing-bomb/> accessed on 14 December 2011. See also, Briefing, Thomas R. Rutherford, Chief, Fissile Material Control Division, CTR Directorate, DTRA, "Mayak Fissile Material Storage Facility," October 2003.

<sup>86</sup> "Striking Miners Block Railways and Energy Supplies to PO Mayak," 25 July – 7 August 1998, in Nuclear Threat Initiative, Databases, "Russia: Ozersk" at [www.nti.org/db/nisprofs/russia/fissmat/pumayak/pomayak.htm](http://www.nti.org/db/nisprofs/russia/fissmat/pumayak/pomayak.htm) accessed on 15 December 2011.

<sup>87</sup> This 6,000 figure was cited in the DoD CTR Implementation Plan for 1998, which was sent to Congress. At that time, the CTR

program Office estimated that the double wing FMSF facility would be able to store up to 12,500 dismantled nuclear warheads. See, Report DoD, Cooperative Threat Reduction Implementation Plan for 1998, p. IV-26-27.

<sup>88</sup> Report, Elena Sokova, "Russia: Mayak Fissile Missile Facilities;" Nuclear Threat Initiative, Securing the Bomb Database at <http://www.nti.org/about/projects/Securing-bomb/> accessed on 14 December 2011. See also, Matthew Bunn, "Securing Nuclear Warheads and Materials: Mayak Fissile Materials Storage Facility," Nuclear Threat Initiative, Securing the Bomb Database at <http://www.nti.org/about/projects/Securing-bomb/> accessed on 14 December 2011.

<sup>89</sup> U.S. General Accounting Office, Weapons of Mass Destruction: Effort to Reduce Russian Arsenals May Cost More, Achieve Less Than Planned, GOA/NSIAD-99-76, April 1999.

<sup>90</sup> U.S. Department of Defense, Office of the Inspector General, Cooperative Threat Reduction Construction Projects, DOD-2004-039, December 2003.

<sup>91</sup> Interview, Tom Rutherford, Chief, Fissile Material Control Division, CTR Directorate, Defense Threat Reduction Agency, Department of Defense, with Joseph P. Harahan, Senior Historian, DTRA, Washington, D.C., October 6, 2003.

<sup>92</sup> Ibid; See, Briefing, Thomas R. Rutherford, Chief, Fissile Material Control Division, CTR Directorate, DTRA, "Mayak Fissile Material Storage Facility," October 2003.

<sup>93</sup> Interview, Tom Rutherford, Chief, Fissile Material Control Division, CTR Directorate, Defense Threat Reduction Agency, Department of Defense, with Joseph P. Harahan, Senior Historian, DTRA, Washington, D.C., October 6, 2003.

<sup>94</sup> Interview, Tom Rutherford, Chief, Fissile Material Control Division, CTR Directorate, with Joseph P. Harahan, Senior Historian, DTRA, Department of Defense, Washington, D.C., October 6, 2003. October 6, 2003.

<sup>95</sup> Matthew Bunn, "Securing Nuclear Warheads and Materials: Mayak Fissile Materials Storage Facility."

<sup>96</sup> U.S. General Accounting Office, Weapons of Mass Destruction: Effort to Reduce Russian Arsenals May Cost More, Achieve Less Than Planned, GAO/NSIAD-99-76, April 1999.

<sup>97</sup> U.S. General Accounting Office, Weapons of Mass Destruction: Effort to Reduce Russian Arsenals May Cost More, Achieve Less Than Planned, GAO/NSIAD-99-76, April 1999.

<sup>98</sup> See Elena Sokova, "Russia: Mayak Fissile Missile Facilities;" Nuclear Threat Initiative, Securing the Bomb Database at <http://www.nti.org/about/projects/Securing-bomb/> accessed on 14 December 2011. See also U.S. Department of Defense, Office of the Inspector General, Cooperative Threat Reduction Construction Projects, DOD-2004-039, December 2003.

<sup>99</sup> Ibid.

<sup>100</sup> See Senator Lugar Trip Book, CT Directorate, DTRA, May 2002.

<sup>101</sup> Matthew Bunn, "Securing Nuclear Warheads and Materials: Mayak Fissile Materials Storage Facility." In a 1993 implementation agreement, Russia had promised to blend down up to 500 tons of highly-enriched (HEU) uranium derived from dismantled

Russian nuclear weapons to low-enriched uranium (LEU) and the United States committed to purchasing it for use in commercial nuclear reactors. Over 20 years, the estimated value was over \$10 billion. In 1996 the two nations negotiated an amendment that set prices, quantities, and terms; a development which significantly accelerated the Russian shipments of the reprocessed low-enriched uranium to U.S. nuclear power plants. By March 2002, Russia had blended and delivered 141 tons of HEU, earning over \$2 billion. The following month, negotiators agreed on terms for a new contract, thus extending Russian-American cooperation on reprocessing and conversion. Ibid. p. 66.

<sup>102</sup> Ibid.

<sup>103</sup> For this account, see Matthew Bunn, "Securing Nuclear Warheads and Materials: Mayak Fissile Materials Storage Facility." Information on its influence on the construction project comes from Interview, Tom Rutherford, Chief, Fissile Material Control Division, CTR Directorate, with Joseph P. Harahan, Historian, DTRA, Department of Defense, Washington, D.C., 6 October 2003.

<sup>104</sup> Cable, Unclassified, USDAO-DTROM Moscow, to DTRA Dulles Washington, D.C., CT, CTN, "DOD-RF Discussions on Oversight, Inspection and Review of Construction Progress at the FMSF at Mayak," 18-24 November 2003.

<sup>105</sup> Ibid, see section, "Meeting with Minatom on 24 November."

<sup>106</sup> Deputy Secretary Wolfowitz' letter cited in section "DoD Concerns with the Absence of a Transparency Agreement," in DoD Report, CTR Policy Office, CTR Report to Congress, FY 2005, pp. 64-65.

<sup>107</sup> "Russia Commissions Unique Nuclear Storage Facility," *RIA Novosti*, 17 December 2003.

<sup>108</sup> See Chapter 3, "The Nuclear Weapons Production Complex," in Pavel Podvig, editor, *Russian Strategic Nuclear Forces*, pp. 67-115. See also, Charles Diggs, et al, "The Russian Nuclear Industry: The Need for Reform," Bellona Foundation Report, Vol. 4, Oslo, Norway, 2004.

<sup>109</sup> Agreement Between the Department of Defense of the United States of America and the Federal Agency for Industry Concerning the Safe, Secure and Ecologically Sound Destruction of Chemical Weapons, dated 30 July 1992.

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<sup>111</sup> Igor Khriunov, "U.S. Assistance to Russia's Chemical Demilitarization Efforts", published Shields and Potter, *Dismantling the Cold War*, pp. 363-365.

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<sup>114</sup> For the organizational structure of the various committees and ministries, with essays by the principal leaders, see, Bulletin of Chemical Disarmament, published by the Russian Munitions Agency and Institute of World Economy and International

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<sup>115</sup> Khriunov, "U.S. Assistance to Russia's Chemical Demilitarization Efforts," in Shields and Potter, editors, *Dismantling the Cold War*, pp. 363-375.

<sup>116</sup> Harold P. Smith, Jr., Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs, "Funding CW Demilitarization in Russia: Time to Share the Burden," *Arms Control Today*, Nov/Dec 1998.

<sup>117</sup> Briefing, Kevin J. Flamm, Director, CW Destruction, OSD CTR Office, "Joint Evaluation of Russian Two-Step CW Destruction Process," 26 January 1995.

<sup>118</sup> GAO Report, Weapons of Mass Destruction: Status of the Cooperative Threat Reduction Program, GAO/NSIAD-96-222, September 1996.

<sup>119</sup> Briefing, Kevin J. Flamm, Director, CW Destruction, OSD CTR Office, "Joint Evaluation of Russian Two-Step CW Destruction Process," 26 January 1995.

<sup>120</sup> Harold P. Smith, Jr., "Funding CW Demilitarization in Russia: Time to Share the Burden," *Arms Control Today*, November/December 1998. See also, Interview, Dr. Harold P. Smith, Assistant secretary of Defense for Nuclear, Chemical, and Biological Programs, 1993-1998, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 December 2001.

<sup>121</sup> Harold P. Smith, Jr., "Funding CW Demilitarization in Russia: Time to Share the Burden," *Arms Control Today*, November/December 1998.

<sup>122</sup> Jonathan B. Tucker, "Russia's New Plan for Chemical Weapons Destruction," *Arms Control Today*, July/August 2001.

<sup>123</sup> Peter Eisler, "Plan to destroy Russian weapons nears collapse." *USA Today*, October 1, 2002.

<sup>124</sup> Report DoD, CTR Policy Office, Cooperative Threat reduction Implementation Plan, 1998, pp. IV-39.

<sup>125</sup> *Ibid.*, IV-38-39. See also, Report DoD, CTR Policy Office, Cooperative Threat Reduction Multi-Year Program Plan, Fiscal Year 2000, pp. IV-46-48.

<sup>126</sup> Interview, Harold P. Smith, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Programs, 1993-1998, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 December 2001.

<sup>127</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Multi-Year Program Plan, Fiscal Year 2001, pp. 50-51.

<sup>128</sup> Briefing, Patrick Dowd, Project Manager, CWPF Demilitarization, CT Directorate, DTRA, "Chemical Weapons Production Facility Demilitarization, Volgograd," 6 May 2005. See also DoD Report, CTR Policy Office, Cooperative Threat Reduction Multi-Year Program Plan, Fiscal Year 2000, pp. IV-49-50.

<sup>129</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Multi-Year Program Plan, Fiscal Year 2001, pp. 50-51.

<sup>130</sup> Vice Admiral Sarkisov's remarks are in Report, U.S. National Academies Committee and Russian Academy of Sciences Committee, "Overcoming Impediments to U.S.-Russian

Cooperation on Nuclear Nonproliferation," (National Academies Press, 2004), pp. 104-105.

<sup>131</sup> Harold P. Smith, Jr., "Funding CW Demilitarization in Russia: Time to Share the Burden," *Arms Control Today*, November/December 1998.

<sup>132</sup> GAO Report, "Weapons of Destruction: Status of the Cooperative Threat Reduction Program," September 1996, pp. 18-24.

<sup>133</sup> These Congressional restrictions are detailed in a report by the DoD Office of the Inspector General, Cooperative Threat Reduction, Construction Projects, 18 December 2003, p.14. See also, DoD Report, CTR Policy Office, Cooperative Threat Reduction Multi-Year Program Plan, Fiscal Year 2000, pp. IV-46-50.

<sup>134</sup> DoD was unable to obligate any CTR funds for the Chemical Weapons Destruction Facility at Schuch'ye from FY 1999 through FY 2002 until President Bush certified in December 2002 that Russia was in compliance with the Congressional conditions imposed in the National Defense Authorization Act of FY2000. See report, DoD Report, Office of the Inspector General, Cooperative Threat Reduction, Construction Projects, 18 December 2003.

<sup>135</sup> GAO Report, "Weapons of Destruction: Efforts to Reduce Russian Arsenal may Cost More, Achieve Less than Planned," April 1999, pp. 11-16.

<sup>136</sup> General Petrov's quoted in article, see Seth Brugger, "Russia to Miss CWC Deadline," *Arms Control Today*, May 2000.

<sup>137</sup> V.I. Kholstov, Director-general of the Russian Munitions Agency, "Destruction of chemical weapons is a vital necessity and an issue of mutual concern," *Bulletin of Chemical Disarmament*, No. 1, January 1994.

<sup>138</sup> Jonathan B. Tucker, "Russia's New Plan for Chemical Weapons Destruction," *Arms Control Today*, July/August 2001, pp. 9-13.

<sup>139</sup> See Tucker, "Russia's New Plan for Chemical Weapons Destruction," *Arms Control Today*, July/August 2001, p. 12. See also, Seth Brugger, "Russia Approves new Chemical Weapons Destruction Plan", *Arms Control Today*, September 2001, p. 32.

<sup>140</sup> Tucker, "Russia's New Plan for Chemical Weapons Destruction," *Arms Control Today*, July/August 2001, p. 13.

<sup>141</sup> Statement by G-8 Leaders, "The Global Partnership Against the Spread of Weapons and Materials of Mass Destruction," Kananaskis, Canada, 27 June 2002 at [www.g8.utoronto.ca/summit/2002kananaskis/arms.html](http://www.g8.utoronto.ca/summit/2002kananaskis/arms.html) accessed on 15 December 2011.

<sup>142</sup> *Ibid.* David Sanger, "G-8 Adopts Aid package, With Strict Conditions", *New York Times*, June 28, 2002.

<sup>143</sup> Paul Walker, "LOOKING BACK: Kananaskis at Five: Assessing the Global Partnership," *Arms Control Today*, September 2007.

<sup>144</sup> Testimony John Bolton, U.S. Senate Foreign Relations Committee, October 9, 2002, cited in article by Richard G. Lugar, "The Next Steps in U.S. Nonproliferation Policy," *Arms Control Today*, December 2002.

<sup>145</sup> Fact Sheet G-7/8 Kananaskis Summit, "G8 Summit in Kananaskis, Canada, 27 June 2002, at <http://georgewbush-whitehouse.archives.gov/news/releases/2002/06/20020627-8.html> accessed on 15 December 2011.

<sup>146</sup> News Brief, "Russia Opens CW Destruction Plant," *Arms Control Today*, September 2002. See also, Christina Chuen and James Martin, Issue Brief: Global CW Assistance, Nuclear Threat Initiative, June 2005, at [www.nti.org/e\\_research/e3\\_62a.html](http://www.nti.org/e_research/e3_62a.html) accessed on 15 December 2011.

<sup>147</sup> News Brief, "Chemical Weapons Destruction Begins at Gorny," *Arms Control Today*, January/February 2003.

<sup>148</sup> Rose Gordon, "Bush Signs 2003 Defense Authorization Act," *Arms Control Today*, January/February 2003.

<sup>149</sup> DoD Report, CTR Policy Office, Cooperative Threat Reduction Annual Report to Congress FY2006.

<sup>150</sup> *Ibid.*

<sup>151</sup> U.S. Senator Richard G. Lugar, "The Next Steps in U.S. Nonproliferation," *Arms Control Today*, December 2012.

<sup>152</sup> *Ibid.*

<sup>153</sup> *Ibid.*

<sup>154</sup> *Ibid.*



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## **Redefinition, Realignment and new CTR commitments: The Bush - Putin Years**

For CTR officials, developments in Russia during the first six months of 2002 forced a redefinition and realignment of the entire program. In February, the Russian government announced that its large supply of excess military rocket propellant – approximately 33,000 tons of liquid heptyl fuels, and amyl and mélange oxidizers – had been sold to an international firm that provided rocket fuels to power Russian and other nations' space launch vehicles. This sale meant there were no liquid rocket fuels to process at the newly constructed CTR-funded Liquid Propellant Disposition Facility at Krasnoyarsk. Since the \$95.5 million facility had no other function, it would sit empty. In response, Thomas Kuenning, CTR Program Director, stopped all contracts, immediately.<sup>1</sup> At the same time, Russian officials also advised their American counterparts that the Solid Propellant Disposition Facility at Votkinsk, another new CTR-funded \$100 million destruction facility under design, could fail due to local political objections and the lack of environmental and legal construction permits.<sup>2</sup> So upsetting were these two CTR-project failures in the United States that Paul Wolfowitz, Deputy Secretary of Defense, directed the department's Inspector General to begin a series of investigations into the CTR program's management and the specific problems at Krasnoyarsk and Votkinsk.<sup>3</sup>

Major difficulties also were developing in two other large Russian CTR construction projects. At the CTR-funded \$400 million Fissile Missile Storage Facility at Mayak there were differences between policy officials in the American defense and Russian atomic energy departments over the facility's function and future use. American officials wanted

to know when fissile materials would be loaded into the Mayak facility and what amounts of weapons-grade fissile materials would be stored there permanently. Russian officials refused to sign transparency protocols that required periodic reports on the storage facility and granted the U.S. the right to perform audit and examination inspections. In fact, the Russian ministry did not indicate they would use the new \$400 million fissile material storage facility at all. Since the CTR program had financed the design, construction and equipping of the facility, the possibility that the new, modern storage site would not be used as intended by Russia was disturbing to the Americans.<sup>4</sup> In an attempt to resolve the log jam, Deputy Secretary Wolfowitz wrote directly to Alexander Rumyantsev, Minister of Atomic Energy, requesting a new transparency protocol and auditing agreement.<sup>5</sup>

Another large project, the \$1 billion CTR program to design, construct and equip a modern Chemical Weapons Destruction Facility at Shchuch'ye also encountered obstacles. The Russian ministry responsible for this project delayed reviewing the American designs and then recommended numerous changes. Finally, the ministry failed to pursue new Russian laws with the Duma that would protect the massive construction project from environmental and liability claims. Under current Russian law, the chemical weapons disposal facility project was at risk because the local Kurgan Oblast government could rescind the land use permits for environmental reasons.<sup>6</sup> Consequently, so many issues had developed with Russian chemical and nuclear weapons CTR programs and they became so intractable that President Bush refused to certify to Congress that Russia was in compliance

with the treaties. As a result, all new CTR contracts were shut down across Russia in April 2002.<sup>7</sup>

These failures, delays and developments with the major Russian CTR construction projects had serious consequences for the entire program. It would not fail, but the scrutiny of the program and projects became intense in both nations. The Department of Defense's Inspector General (IG) sent inspectors and auditors to Russia to research the issues, interview senior people and make recommendations. In the final report, the IG concluded: "DOD could have better managed the risk associated with those projects had it negotiated implementing agreements that better defined Russia's requirements, thus making Russia more responsible for storage and elimination of Russian weapons of mass destruction."<sup>8</sup> The IG recommended negotiating and signing new, detailed U.S.-Russian implementing agreements and instituting better program management controls to reduce risks by CTR program managers working in the Defense Threat Reduction Agency. Within that agency, the director and program managers began systematically using a Defense Department program, the Joint Requirements and

Implementation Program, for each CTR project. They also instituted new integrated process teams to improve planning, coordination and project management.<sup>9</sup> In the Office of the Secretary of Defense, the CTR Policy Office began a major review of all programs. A baseline risk assessment of every project evaluated areas where the Russian government's "good faith" promises needed to be renegotiated with legal commitments.<sup>10</sup>

In the U.S. Congress, Representative Duncan Hunter (R-California), chairman of the House Armed Services Committee, held hearings on the CTR program. In his opening remarks, Hunter declared, "The CTR program has strayed from its original purpose at the same time that deeply disturbing instances of mismanagement and negligence are emerging."<sup>11</sup> He pointed to the failed projects at Krasnoyarsk and Votkinsk. The Bush administration's representative testifying at the hearing countered these charges by restating the terrorist threat to the nation. Russia continued to hold the single largest stock of WMD in the world, and just like the other nations of the region, it could not eliminate those weapons alone. Proliferation of these WMD stocks



Defense Threat Reduction Agency

Liquid Propellant Disposition Facility, Krasnoyarsk

represented an opportunity for terrorist groups because the entire region had porous borders, which offered the potential for illicit transit of WMD materials. J.D. Crouch, Assistant Secretary of Defense for International Security Policy, ended his testimony by stating simply, "The Administration believes that it (CTR) is worth the cost."<sup>12</sup>

Congress agreed, but in the next CTR program authorization, it directed the Secretary of Defense to obtain assurances from the Russian government that land and environmental permits had been issued before initiating major new construction projects. Another new Congressional requirement stipulated that the Defense Department had to have a manager on-site, if the total CTR project exceeded \$50 million.<sup>13</sup> However, the most dramatic change in the program had nothing to do with Congress. Instead it came when Department of Defense officials instituted new U.S.-Russian CTR Executive Review meetings in Moscow in July 2002.

## Initial U.S.-Russian Executive Reviews

In the first of these senior-level meetings, Jim Reid and Thomas Kuenning, senior American CTR officials, met with Russian program directors and staffs from the Russian Aviation and Space Agency, Ministry of Defense, Russian Munitions Agency and Ministry of Atomic Energy. The failed CTR project at Krasnoyarsk hung over each meeting. The diversion by the Russian ministries of 33,000 tons of liquid rocket propellant, and the failure to notify the U.S. CTR program directors about the diversion undermined the confidence of American senior leaders. There were questions about the Russian government and its capability to carry out any CTR projects in the future. In the Moscow meetings, Reid sought to clarify the responsibilities of each Russian ministry by insisting on new amendments to the bilateral implementing agreements. To institute more cooperative planning, the American policy and program managers introduced the Joint Requirements and Implementation Program, a method that outlined each projects' assumptions, objectives, schedule and costs, and responsibilities of each party.

The Russian directors, Nikolai Shumkov, Directorate Chief, Russian Air and Space Administration, General Colonel I.N. Valynkin, General Staff, Ministry of Defense, Lev D. Ryabev, First Deputy Minister, Minister of Atomic Energy, and Zinovy Pak, Director, Russian Munitions Administration, agreed on the necessity to negotiate new

amendments to the CTR implementing agreements. They were less certain, depending on the ministry, on the need to introduce American management methods into their ministries. They agreed to provide more information to the American program managers. They wanted to continue all CTR programs and agreed to hold semi-annual program reviews with U.S. officials in the future. Over the next six months, new amendments to the existing implementing agreements were negotiated and signed on Strategic Offensive Arms Eliminations, Nuclear Weapons Safety and Security, Nuclear Weapons Transportation Security, and on assistance for the Chemical Weapons Destruction Facility.

## G-8 Summit and Nonproliferation

On the larger world stage, Presidents Bush, Putin and the other leaders met at the G-8 summit in Kananaskis, Canada in June 2002, just weeks before the CTR senior officials met in Moscow. In Kananaskis, the leaders of the G-8 nations – Canada, France, Germany, Italy, Japan, Russia, United Kingdom and the United States – committed to providing up to \$20 billion in funds, with \$10 billion from the U.S., and \$10 billion from the other seven nations over the next 10 years to assist Russia and the other new nations destroy their legacy weapons of mass destruction. In the initiative, "The G-8 Partnership Against the Spread of Weapons and

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## Major Changes

- ★ U.S. - Russian Executive Reviews
- ★ G-8 Partnership Against Spread of Weapons of Mass Destruction

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Materials of Mass Destruction," leaders declared the funding amounts, years of duration and principle objectives.<sup>14</sup> During formative discussions, Putin recommended the new fund's first set of objectives be to support WMD reduction programs for destruction of Russian chemical weapons, dismantlement of decommissioned nuclear submarines, and employment of former weapons scientists. All of other leaders agreed. In discussions leading to the joint statement, everyone acknowledged the successful model of the long-standing

## With Courage and Persistence

U.S. Nunn-Lugar CTR programs with Russia. The difference this time was that the G-8 leaders included a statement on the necessity of preventing terrorists and those who harbor them from gaining access to weapons or materials of mass destruction.<sup>15</sup>

The significance of this G-8 statement was manifold. Within the U.S. government, it recommitted the Bush administration to the ongoing CTR programs with Russia and the other nations.<sup>16</sup> In the Russian government, it committed the Putin government and its ministries to working through the issues and problems to fund and complete the WMD destruction projects. By the end of 2004, the G-8 leaders had secured from their legislatures specific financial commitments: Russia (\$2 billion), Germany (\$1.8 billion), Italy (\$1.2 billion), France (\$900 million), United Kingdom (\$750 million), Canada (\$740 million) and Japan (\$200 million). The European Union and several European nations also committed funds to the joint WMD

initiative: European Union (\$1.2 billion), Norway (\$120 million), Finland (\$12 million) and smaller commitments from Netherlands, Sweden, Switzerland and Poland.<sup>17</sup> U.S. Senator Richard G. Lugar praised the new commitments: "Under the new G-8 agreement, the United States pledged to spend at least \$10 billion and the other members agreed to match this commitment over the next 10 years. In effect, '10+10 Over 10' will double the resources currently being expended in these areas."<sup>18</sup> The issue for the future would be turning these commitments into programs and projects and actually eliminating the weapons of mass destruction."

### CTR programs with Russia, 2002

By mid-2002, there was an array of CTR programs and projects underway with the Russian ministries. In the Strategic Offensive Arms Elimination area there were multiple projects to eliminate land-based ICBM missiles, silos, road mobile



Defense Threat Reduction Agency

Elimination of SLBM launch tubes



Defense Threat Reduction Agency

Eliminated SLBMs

launchers, train launchers, rocket fuels, ancillary equipment, strategic bases and submarines, missiles, launchers, and spent naval fuels. Another major CTR effort, the Nuclear Weapons Safety and Security Program, was working with the Russian Ministry of Defense's 12<sup>th</sup> Main Directorate to develop projects that enhanced security at the national nuclear storage sites. In a related area, the Nuclear Weapons Transportation Security Program, CTR was funding the movement of nuclear warheads by special trains from military operational units to the national nuclear storage sites and then on to Russia's permanent storage sites. This program also provided routine maintenance and safety enhancements on the specialized railcars, which were transporting nuclear warheads across Russia.

Two large-scale CTR construction projects, the Fissile Materials Storage Facility at Mayak and the Chemical Weapons Disposal Facility at Shchuch'ye, were in different stages of completion. The CTR program had reallocated priorities within its Biological Weapons Proliferation and Prevention Programs, developing new biosecurity and biosafety projects with five Russian biological institutes: Vector in Novosibirsk, SRCAM in Oblensk, Institute for Animal Protection in Vladmir, Phytopathology Institute in Golitsino, and the Biologics Plant in Pokrov.<sup>19</sup>

Across Russia the ongoing CTR projects with the Russian Aviation and Space Administration had eliminated 44 submarine-launched ballistic missile launchers, 98 submarine ballistic missiles, and three nuclear-powered ballistic missile submarines. American officials estimated that by 2012, the CTR program would fund projects that would eliminate 628 submarine ballistic missile launchers, 712 SLBMs and 40 strategic submarines.<sup>20</sup> In the land-based

missile fields in 2002, CTR-funded projects with Russian subcontractors to remove six SS-18 ICBMs from the silos, defuel them and then transport them to storage facilities for destruction. At the CTR-funded destruction sites, Russia destroyed 19 SS-18 and 23 SS-17 ballistic missiles. At a Strategic Rocket Forces missile base, 12 SS-18 ICBM silos were destroyed. CTR program directors projected that by 2012, this program would eliminate up to 150 SS-18 missiles, 130 SS-18 launch silos and 20 launch control centers, and 97 SS-17 and 178 SS-19 missiles. In addition, the program projected that by 2012 it would eliminate 356 SS-25 missiles and launchers, 56 SS-24 ICBMs, 77 SS-N-20 SLBM missiles, and 39 SS-24 rail mobile launchers.<sup>21</sup>

During the same year, 2002, the CTR program funded the movement of approximately 1,500 nuclear warheads in special military railcars on 70 trains from operational bases to the Ministry of Defense's national nuclear storage sites. The project manager for the Nuclear Weapons Safety and Security Program awarded a contract to Bechtel to initiate hiring Russian subcontractors to install comprehensive security upgrades, including Quick Fix fencing at nuclear weapons storage sites. All of these programs and projects signaled that in the first decade of the century, the Department of Defense's CTR program was involved with virtually every aspect of the Russian Ministry of Defense's program for reducing its obsolete strategic weapons and securing its warheads and nuclear materials. By the end of 2002, the Fissile Material Storage Facility at Mayak was 92 percent completed. When President Bush certified to Congress in August that Russian chemical weapons program had provided the required documents and certifications, Russia's Chemical Weapons Destruction Facility at Shchuch'ye underwent final design approvals and site preparations. The Biological Weapons program set up assessments and new projects with five Russian biological institutes.<sup>22</sup>

For all of these projects, the CTR program obligated \$342.2 million for fiscal year 2002. After the failures at Krasnoyarsk and Votkinsk, Jim Reid led a new U.S.-Russian semi-annual CTR Executive Review meeting in Moscow Executive Review, which instituted stronger oversight for every project in Russia.<sup>23</sup> At the Defense Threat Reduction Agency (DTRA), the CTR directorate initiated new contracting procedures. To allow contracts to be implemented more quickly, the agency held an open competition in 2001 and awarded a large "indefinite delivery/indefinite quantity" CTR integrating



Defense Threat Reduction Agency

ICBM missile stage during elimination

contract to: Bechtel National Services Inc., Kellogg, Brown & Root, Parsons Delaware, Inc., Raytheon Technical Services Company and Washington Group International, Inc. This large-scale \$1 billion award allowed DTRA to issue task orders to one or more of the contractors whose rates for services and goods had been accepted and validated. During the first year under this new contract, DTRA reported a 50

percent reduction in time needed to process a normal CTR procurement order.<sup>24</sup>

In another managerial change, the agency adopted a two-phased approach to implementing new CTR construction projects. In the first phase, the American integrating contractors researched and resolved all of the land allocation issues, secured land and environmental permits, incorporated all project design changes and resolved all other pre-construction issues. Only after completion of these tasks would the second phase, actual construction, begin.<sup>25</sup> Another managerial change improved communications for the CTR project managers. Before these changes, DTRA managers working in Russia, Ukraine and the other nations had to rely on antiquated national communications systems. During 2002 and 2003, DTRA invested in new communications systems, both telephone and internet, that improved project managers' ability to report data electronically and to provide situational awareness of the CTR programs and projects across Russia and the other regional nations.



Defense Threat Reduction Agency

Eliminated SS-N-20 SLBMs

During the year, DTRA's program management teams conducted 140 trips to Russia and other nations' project sites. Team size depended on the project and issues – but day-in,

day-out – there were 40 or more CTR team members in Russia in 2002.<sup>26</sup> Finally, CTR Director Kuenning instituted a new system of implementation metrics to gauge performance of key CTR program indicators. Each quarter, these metrics became the measuring rods for the directorate’s senior managers as they reviewed every program and project. In addition to these internal performance metrics, DOD sent CTR program audit and evaluation teams to Russia and Ukraine. They conducted 14 inspections of “any material, training or other services” provided under the CTR agreements. In 2002, the CTR program did not meet its implementation metrics



Defense Threat Reduction Agency

CTR provided crane eliminating ICBMs

for the year, principally due to the delay by the president in certifying approval to Congress on the Russian chemical weapons destruction effort. Also, five U.S. requests for audit and evaluation inspections of Russian projects had to be cancelled, due to the absence of legal auditing arrangements with the Ministries of Atomic Energy and Defense.<sup>27</sup>

In December 2002, President Bush signed and published a new National Strategy to Combat Weapons of Mass Destruction.<sup>28</sup> In this document, the president declared that weapons of mass destruction located in nations hostile to the United States or in terrorist groups represented one of the greatest security challenges to the nation. The new national strategy had three pillars: counterproliferation to combat the use of weapons of mass destruction; strengthened nonproliferation programs to combat WMD proliferation; and consequence management to respond to any WMD use. A number of traditional measures fell under the second pillar: arms control treaties, diplomacy, multilateral agreements, threat reduction programs and export controls. Within a matter of months, Department of Defense officials had

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## Two-phased CTR contracts

1. Land issues, land permits, design and plans, preconstruction issues
  2. Actual construction contracts
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realigned the CTR program’s main objectives to incorporate the Bush administration’s new national WMD strategy.<sup>29</sup> For the next six years the CTR program’s objectives followed one of four objectives.

**Objective 1:** Dismantle the former Soviet Union nation’s WMD and associated infrastructure.

**Objective 2:** Consolidate and secure the former Soviet Union nations’ WMD and related technology and materials.

**Objective 3:** Increase transparency and encourage higher standards of conduct.

**Objective 4:** Support defense and military cooperation with the objective of preventing proliferation.

## Re-scoping the CTR Program

In March 2003 the CTR policy office in the Pentagon initiated a six-month, detailed, project-by-project review of every program and project to make certain it addressed the new threats associated with the administration’s war on terrorism. Known as “re-scoping,” this review used evaluation criteria established by Lisa Bronson, Deputy Undersecretary of Defense for Defense Technology Security Policy and Counterproliferation, and Jim Reid, Director of the CTR Policy Office. As they reevaluated all CTR projects with Russia, Ukraine, and Kazakhstan and the other nations, they asked several questions: Did the CTR projects contribute to WMD threat reductions? Did the projects support the global war on terrorism? Were they the best value for taxpayer’s money? What were the Russian and other government’s current stake and future responsibility for these projects? When the review was completed in



National Defense University

Lisa Bronson

August, they briefed the revised program to department leaders and then to the Bush administration's National Security Council's committees. They then presented it to the Russian government's ministries in November. All CTR projects were revalidated, with some important program adjustments. When Bronson testified to Congress in the fall, she explained the changes.<sup>30</sup>

In the area of eliminating Russian liquid-fuel missiles, Bronson explained that the CTR program would not regrade the SS-18 silo sites on the Strategic Rocket Forces missile bases. This action was no longer a part of CTR's core threat reduction mission, and instead it should be assumed by Russia. With the Russian Navy, the rescoping review determined that CTR would not eliminate any more decommissioned SS-N-20 missiles unless the Russian Navy nominated more strategic nuclear submarines to be dismantled. In explaining this decision, Bronson said that one of the CTR program's policy objectives was to eliminate both the submarine's missiles and launchers. In carrying out dismantlement of strategic submarines, she stated that the CTR projects would continue to fund defueling nuclear submarines, sealing the reactors, and eliminating the missile launcher's compartments. It

would not, however, pay for cutting up the submarine's bows and sterns, and she recommended that this dismantlement work be done by Russian shipyards. Another CTR project, funding construction of large storage casks that stored radioactive spent naval fuels, would continue but the project would not transport the storage casks to the new fissile materials storage facility at Mayak. Bronson explained there was sufficient storage capacity at the Russian shipyards, making the transportation unnecessary.

In the large Nuclear Weapons Security and Transportation program all but two projects were revalidated. The personnel reliability and emergency response support programs were to be turned over the Russia. In Ukraine, Bronson explained that as a result of the review, they had decided to cancel the CTR project that would have converted the solid fuel in 163 SS-24 rocket motors into a mining explosive material. The pilot project in Ukraine was over budget and faced risks of cost escalation. The CTR policy office pledged to continue funding the storage of SS-24 rocket motors in warehouses in Pavlograd, and it offered the Ukrainian government a less expensive, more direct way of elimination.

Bronson announced that in Ukraine there were three other CTR projects that would be cancelled since they were infrastructure dismantlement projects that no longer supported the program's central threat reduction mission. In addition, Bronson stated that the CTR policy office would transfer responsibility in Russia for selected nuclear weapons storage site projects from Department of Defense to the Department of Energy. Finally, she explained that the department's re-scoping review of CTR programs and projects in Russia and Ukraine had reduced Congressional obligations by \$185 million over the next five years. That money would be reallocated to other CTR projects, or sent to the Energy Department for its work on the nuclear weapons storage projects.<sup>31</sup>

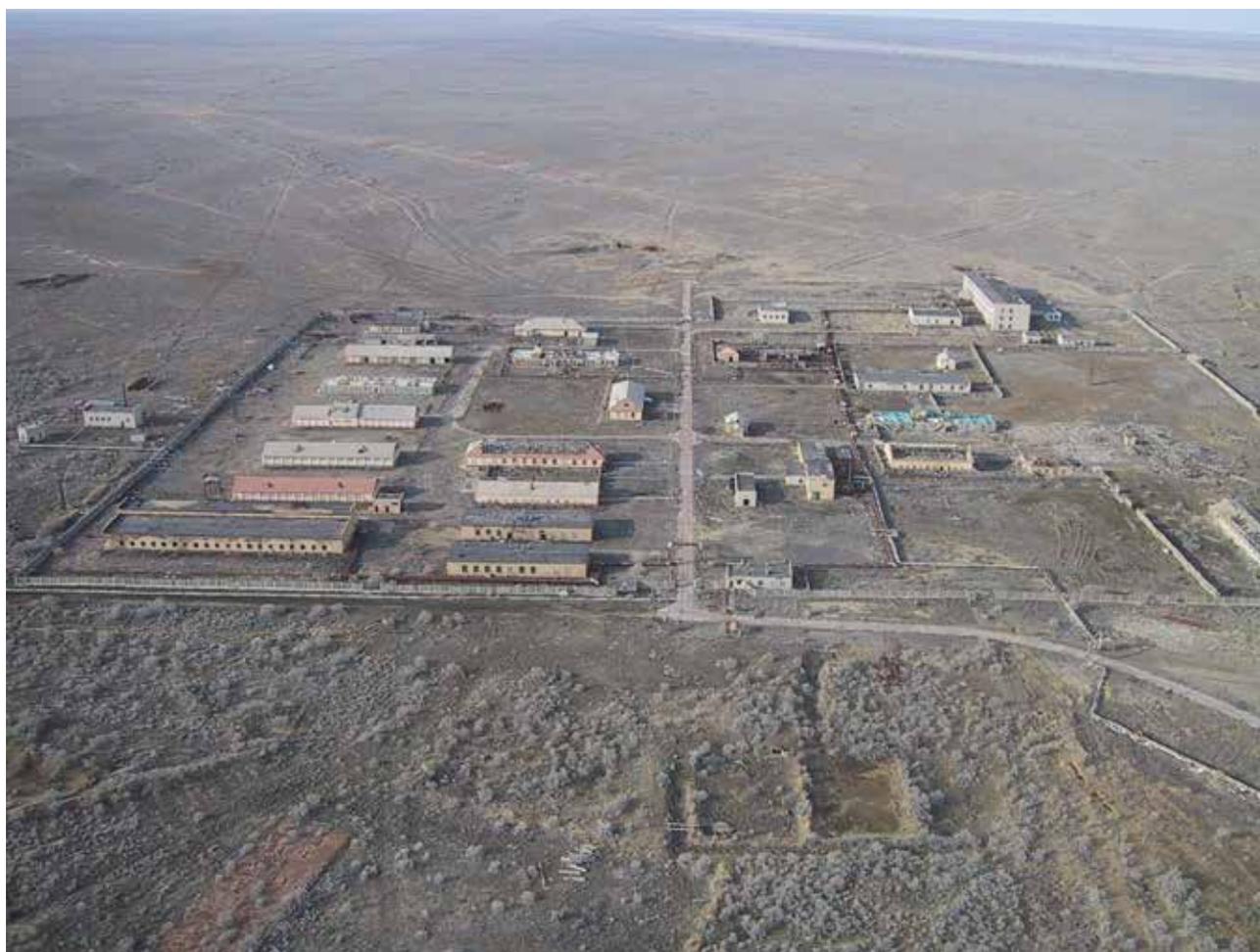
During the re-scoping review two new programs emerged, Bronson told the Congressional committee. The first, the Biological Weapons Proliferation Prevention program, was an important new initiative by the United States to work with the new nations in Eurasia: Uzbekistan, Kazakhstan, Georgia and Ukraine. It sought to develop bilateral biosafety and biosecurity programs that would secure the former Soviet biological weapons institutes and their dangerous pathogens. A few years before, mysterious letters lined with anthrax had been sent to U.S. elected officials in Washington,

D.C. Five Americans died, 17 were injured, and there was widespread speculation the anthrax attacks were linked to the terrorist group, al Qaeda. Simultaneously in Afghanistan, U.S. military forces found plans for bioterrorism attacks in al Qaeda terrorist camps. Two years later in 2003, ricin labs were located in Chechnya, Russia.<sup>32</sup> The presence of biological weapons in Russia was not a surprise to experts. Bronson told the committee, "We estimate that there are approximately 40 institutes that were part of the Soviet BW program."<sup>33</sup>

During the Soviet Union's existence, it had created the largest, and deadliest, biological weapons program in the world, involving 30–40,000 specialists. Although Russia inherited many of these facilities, biological weapons labs and former production facilities existed in other nations as well. For more than a decade, American Nunn-Lugar CTR policy officials and their Russian partners had discussed cooperative programs, but they had developed only a few

programs for assisting the biological laboratories. That changed with the rise of international terrorism.

Following the anthrax attacks on Washington, D.C., Congress enacted new funding for CTR's biosecurity and biosafety programs in 2002 and in subsequent years. Andrew Weber, CTR policy office, planned and oversaw new biological infrastructure projects in Russia, Kazakhstan, Uzbekistan and Georgia. Weber worked closely with Michael A. Balady, CTR biological program manager at DTRA and his staff in developing new programs and projects. In Russia, the CTR program developed biosecurity and biosafety projects with research institutes and laboratories. Some projects dismantled and decontaminated selected buildings at former Russian BW complexes. Weber explained the U.S. policy objects in these years: "Initially we were concerned with proliferation to states like Iran that were suspected of pursuing biological weapons programs. Then, certainly, after 9/11 we were much



Vozrozhdeniye Island, Uzbekistan

Defense Threat Reduction Agency



Defense Threat Reduction Agency

Ship provided to Azerbaijan under the Caspian Sea WMD maritime interdiction cooperative project

more concerned with the leakage of materials, pathogens and expertise to potential terrorist groups.<sup>34</sup> Other cooperative projects were already underway, dismantling a large former anthrax production facility at Stepnogorsk, Kazakhstan and planning to decontaminate and dismantle a dual-use laboratory capable of producing viral animal pathogens at Biokombinat, Georgia. Finally, a CTR project team collected and destroyed 165 tons of abandoned anthrax materials on Uzbekistan's Vozrozhdeniye Island in the Aral Sea. There were also several projects to develop cooperative biological research programs with the scientists working in the research institutes and laboratories.<sup>35</sup>

The second new program, the Weapons of Mass Destruction Proliferation Prevention Initiative was designed to assist Eurasian and Central Asian nations in preventing, detecting, deterring and seizing illicit trafficking of weapons of mass destruction by placing new radiation detection technologies at border crossing points, instituting training programs and developing joint procedures. These new programs complemented the American wars being fought in Afghanistan and Iraq. A senior official from the Defense Department, Lisa Bronson, told Congress that through this program, "[DOD] intends to build capacities of Kazakhstan, Azerbaijan, Uzbekistan and Ukraine to stem the potential proliferation of WMD."<sup>36</sup> The program began with negotiating and signing of bilateral legal documents, designated as framework agreements. In October 2003, the United States and Uzbekistan officials signed the first WMD framework agreement and

then in January 2004, the two nation's defense officials signed a similar bilateral framework agreement. U.S. CTR program officials began negotiating with Kazakhstani and Ukrainian officials requirements for new legal bilateral WMD agreements. In every case, the CTR objective was to provide funding, managerial support, equipment, training and other necessary items to help develop a self-sustaining capability within these nations to monitor and prevent the trafficking of WMD materials across the borders.<sup>37</sup>

One element in this new initiative was to establish a Caspian Sea WMD maritime interdiction cooperative project. This CTR program provided surveillance radars, boarding and maritime interdiction equipment, including small vessels, to Azerbaijan and Kazakhstan to build up their capability to police maritime borders against attempts at illicit WMD smuggling. Program managers worked on a five-year time period for creating these new national capabilities. Although the Weapons of Mass Destruction Proliferation Prevention Initiative was not a security assistance program, DOD coordinated its planning and projects with other U.S. agencies to develop a strategic plan for export controls and border security assistance to these nations. In FY2003 and FY2004, the CTR program director requested \$40 million from Congress for this initiative.<sup>38</sup>

To these new programs, the Bush administration added its "appreciation" to Congress for its grant of new authority to the president to use up to \$50 million annually, to be taken from existing appropriations, for projects in nations that were outside of the states in the former Soviet Union. By 2004 this provision had funded a new CTR project in Albania to collect and eliminate obsolete chemical weapons. In February 2004, President Bush called for an expansion of the G-8 "Global Partnership Against the Spread of Weapons of Mass Destruction" program to counter proliferation threats worldwide.<sup>39</sup> Bush spoke about retraining WMD scientists and technicians based in Iraq and Libya, and the need to secure and eliminate WMD and radiological materials across the world. To support President Bush's new G-8 proposal, Department of Defense officials urged Congress "to maintain the new [transfer] authority."<sup>40</sup>

When one considers the re-scoping evaluations done in the Pentagon on traditional weapons reduction and security projects, together with new biological security programs and the new WMD-proliferation prevention initiative, and expansion of the effort outside the former Soviet Union,

it meant that the Department of Defense's CTR program had been redefined by 2005. Its policy objectives had been realigned with President Bush's national strategy to combat weapons of mass destruction. Its policy and programs constituted an important part of U.S. commitment to the G-8 "Global Partnership Against the Spread of Weapons of Mass Destruction." Its new programs, especially biological and WMD initiatives, had become a part of President Bush's global war on terrorism. Russian ministries were briefed on these changes and new executive reviews had been established between the Defense Department and specific Russian ministries.

Cooperative team meetings were set up for each project and new managerial formats agreed on for bilateral program reviews. With exception of the nuclear weapons safety and security program, which Presidents Bush and Putin accelerated at a summit in Bratislava, Slovakia in February 2005, Congress, with the leadership of Senator Lugar, funded the CTR programs at continuing levels. All other CTR projects remained in effect and continued to eliminate Russia's obsolete strategic weapons, secure its weapons storage sites, transport its nuclear weapons and materials, construct its chemical weapons disposal sites, and then in other regional nations plan and develop biological collection, safety and security projects, and develop the capability to prevent the movement of WMD across borders and seas.

## **New rationalization for the CTR program**

Rationalization of the CTR program's managerial structure and philosophy within the Defense Department constituted another major change. Following the failures at Krasnoyarsk and Votkinsk, Paul Wolfowitz directed the DOD Inspector General to investigate the CTR program.<sup>41</sup> At the same time, Congressional committees directed GAO investigators to conduct a series of investigations of the program. Within a year, there were more than 20 investigations of the contracting and managerial performance of the CTR program.<sup>42</sup> Most of the DOD investigations concluded that the department should have established better managerial systems to monitor and control the projects in Russia and the other nations. Stephen Younger, director of DTRA, and Thomas Kuenning, senior CTR program officer, launched an initiative to change the

department's oversight of the program's implementation. Younger believed that the Department of Defense's CTR policy office had micromanaged implementation of all the programs, and he persuaded Michael Wynne, Under Secretary of Defense for Acquisition, Training, and Logistics (AT&L) and Dale Kline, Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense to change the department's managerial structure, placing DTRA's CTR implementation program under Patrick J. Wakefield, Deputy Assistant Secretary of Defense for Chemical Demilitarization and Threat Reduction. This change was significant since Wakefield was a senior acquisitions manager, and would demand that DTRA's CTR program directors and managers establish and follow a far more rigorous formal acquisition process in planning, reviewing, approving and managing new and existing projects.<sup>43</sup>

As a result of these changes, the Defense Department restructured its responsibilities for the policy and implementation of the CTR program. Henceforth, the CTR policy office would provide strategic policy guidance that defined the program's objectives, scope and direction. It would develop long-range planning documents, provide policy oversight, and engage in CTR policy discussions and meetings with the recipient states, including negotiating and signing implementing agreements. The CTR policy office, in coordination with the Under Secretary of Defense for Policy, was responsible for interaction with Congress, contacts and briefings to the National Security Council staff, and contacts with other Executive departments and agencies, and for public affairs.<sup>44</sup>

By contrast, Wakefield provided strategic implementation guidance and acquisition oversight for the CTR program to DTRA. He was also responsible for managing acquisition contracts and management of funds through all phases of implementing programs and projects.<sup>45</sup> DTRA provided five people to work with Deputy Assistant Wakefield on oversight and management of the CTR program. At the same time at DTRA, CTR Director Kuenning reorganized the CTR directorate, establishing two new divisions: one for Chemical Weapons Elimination and the other for Biological Weapons Proliferation Prevention. Within the directorate, people were assigned to the biological division, a new WMD-proliferation prevention division, and a program integration division. In September 2003, when Kuenning departed, Younger appointed John T. Byrd, a senior executive manager,



Defense Threat Reduction Agency

John T. Byrd, Senator Richard G. Lugar, Irene Nehonov and Andrew Weber

as the new director. Working together, Wakefield and Byrd developed a new CTR project development and management process.<sup>46</sup>

The new process began with introduction of the Department of Defense's acquisition discipline methods for developing and managing large-scale construction or weapons systems elimination programs. The model relied on a senior manager who would be the milestone decision authority. That person would use a formal review system to approve all aspects of the program managers' estimates on the planning, integration, contracting and performance for every project. Cost, schedule and performance were the three important criteria in every CTR project and program. To these criteria, the milestone decision review method added the task of defining risks in every program. The designated milestone decision authority official provided oversight to every CTR project, approved every program, and monitored every aspect of the acquisition and implementation strategy. He had the power to withhold approval if the project was at risk of failure. Normally, at DTRA the CTR Director would be the milestone decision authority for most of the programs. However, because the project to construct the CW destruction facility in Russia was on the White House critical list, as well as a few other CTR projects, Wakefield became the decision authority. "I am the milestone decision authority," Wakefield explained, "for the chemical weapons destruction program, the biological weapons destruction program and the weapons of mass destruction proliferation prevention."<sup>47</sup>

## Instituting New Managerial Systems

Another process designed to improve program management was introduction of the department's Integrated Product and Process Development system at the beginning of all new cooperative projects. Normally, the CTR project manager identified all of the project's direct interest groups, such as local government entities, military commands, general and sub-contractors, and the major bureaucratic institutions. Then, he would set up meetings with these groups and invite them to review the project periodically. At the initial 2004 meetings in Russia, the American project managers explained the new ground rules. They identified all parties and their relationship to the project, and then explained the project's cost, schedule and performance objectives. In follow-up meetings, the project was reviewed and new issues surfaced. The project manager's objective was to introduce and sustain transparency and reduce risk.<sup>48</sup>

Congress directed the Defense Department to institute a third path to institute new managerial oversight. In the CTR authorization bill for FY2004, Congress established a requirement to place on-site managers at Russian and other nations' CTR projects involving dismantlement, destruction, storage or construction sites where investment was projected to exceed \$50 million. Wakefield appointed on-site managers for the U.S.-Russian Strategic Offensive Arms Elimination (SOAE) projects and for the Chemical Weapons Destruction Facility construction project in Shchuch'ye. Byrd recommended setting up on-site managers for the Biological Weapons Proliferation Programs in Tashkent, Uzbekistan and Tbilisi, Georgia. By 2006, these new managers were identified, trained and sent to work in Russia, Uzbekistan and Georgia.<sup>49</sup>

Defense Department officials also worked with the five large American corporations that were CTR Integrating Contract contractors to develop and institute an independent validation process to measure the efficiency of their costs and projected schedules. These companies worked with Russian subcontractors to carry out the actual work in dismantling missiles and launchers, destroying bombers, securing nuclear storage sites, moving nuclear materials by trains and constructing the chemical weapons destruction facility. Wakefield thought that integrating contractors were helpful for "a couple of reasons." Russian contractors did the actual work as subcontractors to these large American corporations. That relationship, he explained, was "formal

and legal” but by having an American corporation serving as on-site manager, it provided “surveillance” over the work being done in the field. Working with the Defense Contract Management Agency, the integrating contractors established an earned value management system that allowed agency auditors to put into place a routine system for monitoring data on the projects’ cost and schedule efficiency. Developing and instituting these systems took several years. By 2007 three of the five corporations had contractor systems which had been validated. In that year, the Defense Department developed a two-week management training course that taught acquisition planning, program management and contract management. It emphasized the earned value management systems that monitored and evaluated contractor performance.<sup>50</sup>

In the WMD-Proliferation Prevention Initiative department managers adopted a spiral development implementation strategy. To mitigate risk, the strategy directed that CTR program managers implement new projects in incremental phases. In 2004, the Department of Defense wanted the CTR policy office to build anti-WMD smuggling capacities in four nations: Kazakhstan, Azerbaijan, Ukraine and Uzbekistan. The projected five-year funding estimate for work in all of these nations was \$150 million. Working with border officials in each nation, CTR program managers followed the spiral implementation strategy so that each phase would focus on developing a particular national capability that the recipient nation had to develop to execute a particular task. Accordingly, the “Quick Equipment Support Package” for Azerbaijan included establishing a joint command and control center, repairing and upgrading patrol vessels, installing WMD detection equipment, and installing new radars and a data network. When this work was completed in 2006, meetings with both nations’ program officers developed requirements and objectives for the program’s next phase.<sup>51</sup>

## **2004 and 2005 U.S-Russian Executive Reviews**

Before holding formal executive reviews with the four Russian ministries, U.S. CTR policy and program leaders conducted in Washington, D.C. a full-scale integrated program management review of every project being implemented across Russia. Led by Pat Wakefield and

John Byrd, these program review sessions examined in detail all issues associated with the cooperative programs in nuclear weapons storage and security, nuclear weapons transportation, missile and submarine dismantlement and destruction, fissile materials storage facility, and the massive chemical weapons destruction facility. Wakefield required that program managers go through each program in its entirety: explaining its cost, schedule, performance, risks and issues. “I insisted,” he explained, “that we reveal it to the Russians, so that they know how we are measuring it, and they know precisely how they are being measured, and we were very frank.”<sup>52</sup> Byrd was a demanding program manager who wanted better results in the projects with his Russian counterparts. Both men insisted the U.S. government get its money’s worth for its CTR program in Russia.

As the meeting with the Russian Ministry of Defense opened in Moscow, Byrd explained to Colonel General I.N. Valynkin, Chief, 12<sup>th</sup> Main Directorate, Russian General Staff, that the American program managers would discuss implementation assumptions, issues and risks in a “frank and open” way. Since there were more projects in Russia than the CTR program could pay for, Byrd said the managerial reviews were a way to influence decisions to cut work or cut back on some projects, jointly. General Valynkin responded that there were lots of points of contact and common ground. “With a better relationship,” Valynkin declared, “we are able to resolve issues, because with personal relationships, one can always find resolution.”<sup>53</sup>

When American program managers, Hunter Lutinski, Mark West and Lt. Colonel Zane Mitchell, briefed specific programs they discussed the American managerial concepts of baseline, milestone decision authority, objectives regarding cost, schedule and technical performance, thresholds, acquisition discipline and accountability. They explained all of the nearly 40 projects underway across Russia, using color codes to measure the level of risk in each program. For instance, when Lutinski reviewed his largest CTR project, the projected five-year \$225 million nuclear weapons storage sites enhancement program, he explained to General Valynkin and his senior staff officers the major risk factors were requirements growth, infrastructure scope, inflation and the changing criteria for exiting the program.<sup>54</sup> They responded, citing recent meetings between Major General M.V. Starodubtsev and Colonel A.V. Adveev with the American project manager and his staff that determined

the performance parameters for each project at the nuclear weapons storage site. They established the probability of detection after installation of the security equipment and devices.<sup>55</sup>

Lt. Colonel Mitchell briefed the senior officers at integrated program management review on the American project to design, construct and equip the Chemical Weapons Destruction Facility at Shchuch'ye to General Victor Kholstov, Deputy Director, Rosprom, and his staff.<sup>56</sup> When the long review began, Reid, Wakefield and Byrd stressed that the U.S. government would not fund the Russian CW assistance program beyond \$1.039 billion. They insisted the U.S. wanted a joint schedule, and that it planned to turn over the completed CW destruction facility to the Russian government in December 2008.<sup>57</sup> Then Mitchell explained the large construction project's "rebaselining" estimates as of February 2004, the need for an agreed upon joint schedule, the projected level of funding, the requirements for a new laboratory and the specialist's camp, the configuration's management plans, and a date for transfer of custody. Next, Paul Wojciechowski, project manager at Parsons Delaware, Inc., spoke about a series of problems: site access, visa approvals, and the need for daily communication with Russian managers at the site. General Kholstov and Colonel Victor I. Serbin challenged the American managers on most of these issues, demanding specifics and maintaining their authority to manage the large-scale Russian project. The exchange was lively, with the Russian ministers defending their Moscow-based managerial systems and the Americans insisting on greater on-site coordination.<sup>58</sup>

What these new U.S.-Russian Executive Review meetings did was explain the data from American program managers to senior-level Russian ministers. By including the U.S. CTR program directors Wakefield and Byrd, the bilateral briefings and discussions covered all aspects of the projects: current managerial systems, metrics for measuring progress, schedule, costs, problems, issues and even some recommended solutions. The lengthy, complex briefings were conducted in Russian and English, with translations of the discussions. Usually, they lasted one-half to three-fourths of a day. The briefings and discussions did not seek to change the Russian ministries' structure or command lines. These ministries had their set of laws, administrative procedures, and missions and programs to carry out. Instead, they focused on the CTR projects and issues that needed to be resolved

to ensure completion on schedule. Colonel Richard Green served during these years as the chief of DTRA's office in the U.S. Embassy-Moscow. Attending these meeting, Greene observed, "Those are serious roll-up-your-sleeve [meetings]. I mean there are points in there that are discussed that are very, very focused, very pointed: This has got to happen."<sup>59</sup>

On some CTR projects, Defense Department and Russian ministry leaders had been meeting and working on the same issues for more than 10 years. Most of those meetings, led in recent years by Jim Reid, focused on policy and agreement issues. At the sites, U.S. and Russian program managers worked within the bilateral implementing agreements, often with difficulty. The addition of these program briefings to the bilateral Executive Review meetings in Moscow was an attempt by American senior managers to explain to Russian ministry leaders the American processes for managing the project's commitments and assumptions. They wanted to discuss the most serious issues and problems. In the days before and after these Executive Review meetings, there was a series of side meetings between senior leaders of both nations. During the Executive Review meetings themselves, there were executive sessions to discuss sensitive items. Colonel Green explained that the discussions followed the line: "If we are going to work together, if we're going to get this done, this has got to happen. What do we do to help the Russian Federation make this happen?"<sup>60</sup> Wakefield recognized the Russian ministerial leaders worked in "a different system," but he thought the program management reviews had gone well. "They knew," he said, "what the agenda was, ... they were fully prepared and engaged to discuss the issues at hand, and recognized how we look at a program, [which] was absolutely consistent with the DOD model for acquisition management."<sup>61</sup>

Did it work? Certainly, the reviews outlined the American CTR projects and identified the issues. Russian ministerial leaders listened, questioned, discussed, agreed and disagreed on specific issues, and ended every executive review with a commitment to meet again within six months. In fact bilateral meetings resumed in November 2005 and the two nation's ministerial leaders met twice in 2006, 2007 and 2008. On each occasion, the meetings began with the American CTR program managers' review of each project's integrated program management plan, which included references to the joint requirements implementation plan and the working integrated process teams. Issues surfaced,

objectives were discussed and a schedule was announced. While not every project ran smoothly or even met the projected schedule, these meetings helped focus attention on the actual projects, their implementation and completion.

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## American CTR effort (2006)

- ★ 10 major programs
  - ★ 35 different projects
- 

American CTR program managers like Donald Holcomb recognized their value. “Every time that you are dealing with the Russian government,” Holcomb recalled, “the issue is to primarily figure out how to implement more effectively or more efficiently the program or product you are working on. So it’s imperative that you have these communications with the other government .... We don’t do anything without their understanding and support in their country. They don’t get anything from us without our government’s support.”<sup>62</sup>

At one meeting in Moscow, John Byrd explained, “This is part of a larger effort across the CTR program to improve our management.”<sup>63</sup> Here, Byrd meant incorporation of DOD acquisition management methodology into the management of every CTR project in Russia, Ukraine, Kazakhstan and other nations. By December 2006, Byrd’s portfolio included 10 major CTR programs and 35 projects. More than 200 federal and contract employees worked at managing the annual \$350 million CTR program.<sup>64</sup> At the agency, Byrd developed a range of formal training courses to help project managers and staffs acquire knowledge of the multiple managerial acquisition systems needed to direct the CTR projects. All program and project managers and support staff had to take these courses:

- Project Management
- Risk Management
- International Negotiations
- Systems Engineering
- Budget and Fund Management
- Technical Evaluations
- Cost Estimating
- CTR Regulatory Environment/Sustainment
- Safety and Awareness

While training had always been a part of DTRA’s CTR program, Byrd elevated it to a much higher and more intensive level. From 2005 through 2009, he required every CTR person to train in one of these courses for two weeks a year, once in the spring and again in the fall. Byrd also instituted international training courses with project managers and contracting officials in the Russian ministries.

As the principal CTR program implementer, Byrd responded to Wakefield’s demand and submitted detailed monthly reports about each project’s status in every nation. Although Wakefield resigned in the fall 2005, Douglas England, his replacement, kept the same managerial philosophy for oversight of CTR program implementation within the U.S. government, and for transparency in program implementation with the Russian ministries. Gradually, the perception and reality of managing CTR program implementation changed. Within the Department of Defense and the Russian ministries, there was a sense that the American program was being managed in a stronger, more disciplined way.

## Bush-Putin Bratislava Summit and accelerating CTR projects for Russian Nuclear Security

When Presidents Bush and Putin met in Bratislava, Slovakia in February 2005, they signed a joint statement declaring, “The United States and Russia will enhance cooperation to counter one of the gravest threats our two countries face, nuclear terrorism.”<sup>65</sup> They stated that their two nations would continue their “cooperation on security upgrades of nuclear facilities” and develop a plan for work through and beyond 2008 on “joint projects.” The impetus for the American willingness to support the projects stemmed in large part from a National Intelligence Council report published in November 2004. The Council concluded that “risks remains” that terrorists could seize weapons or materials from Russia, and they expressed doubt that the Russian government could install and sustain the U.S. provided security upgrades currently being provided under the CTR program.<sup>66</sup> The key element embedded in the Bush-Putin statement was for the two governments to plan, install and sustain security upgrades across Russia by December 2008. It established a new bilateral group, the Special Interagency Group, chaired by the U.S. Secretary of

Energy and the Russian Rosatom director that would oversee implementation of this cooperative effort and make periodic reports to each president and government.<sup>67</sup>

In the next few months, the Russian Ministry of Defense identified to U.S. officials those nuclear weapons storage sites that needed security upgrades. The U.S. government agreed to work with the Russian ministry and upgrade 15 storage sites – eight to be accomplished through DOD’s CTR program, and seven by the Department of Energy’s program. Energy Department officials already had some experience working on similar security projects with the Russian Navy. Together they had succeeded in completing rapid security upgrades at 42 naval warhead storage sites by 2003, and had instituted programs to complete comprehensive security improvements at every site by the end of 2005. In addition, Russian Navy and the U.S. Energy Department officials had developed procedures for cooperation, including access to sensitive sites, and procedures for final observations of the contracted work. In 2005, the Russian Ministry of Defense requested that Department of Energy provide security upgrades at some of the Strategic Rocket Forces storage sites. As a result, the Department of Energy became part of the U.S. government’s plans for enhancing security at the Russian

Ministry of Defense’s nuclear weapons storage sites agreed to in the Bratislava Agreement.<sup>68</sup>

Before Lutinski, the American CTR program manager, arrived in Moscow in June 2005, he had developed cost estimates for the accelerated project. In Washington, Reid and Lutinski had briefed the project and its costs to the National Security Council’s interagency committee, the Vice President’s staff and Senator Lugar’s key staffers.<sup>69</sup> The NSC staff divided the large scale project into two parts, one for the Defense Department’s Cooperative Threat Reduction program, and the other for Department of Energy’s International Material Protection and Cooperation program. Lutinski estimated that DOD’s cost for accelerating the project would be \$44 million. The Bush administration inserted that figure into a supplemental budget request and in 2006 Congress approved it. Lutinski, Reid and Byrd met in Moscow with the Russian General Staff officers and developed the requirements and standards for the security upgrades outlined in the Bratislava Initiative.<sup>70</sup>

At the program management level, work began with a series of negotiations in Moscow between Reid, Lutinski, and Major General Mikhail Vasilyevich Starodubstev, Deputy Chief, 12<sup>th</sup> Main Directorate and their staffs. Working together,



U.S. President George W. Bush and Russian President Vladimir Putin at the signing of the Bratislava Agreement in Slovakia, 2005

they developed a basic “zero” design package for each of three different types of Russian security sites and the types of security equipment, facilities and training standards that would be included. They went over the rules needed to employ Russian firms as subcontractors, and estimated a rough working schedule for starting and completing the security upgrades. General Starodubstev was interested in the U.S. CTR program maintaining its funding for rail transportation of nuclear warheads and components from the missile field regiments and divisions to the national nuclear warhead storage sites. Connected with that effort was a commitment by the CTR program to fund construction of up to 100 new cargo railcars and 64 new armored security vehicles to transport warheads from the field sites to the rail transfer points.<sup>71</sup>

Starodubstev and Lutinski began negotiations by working out a mutual understanding of the scope of work. The Russian-American negotiating teams established three “site zero” security model enhancements for three different types of nuclear security storage configurations: a rail transfer point, a small nuclear weapons storage area and a large national stockpile storage site. Each type had different security requirements. Starodubstev and Lutinski recommended that the U.S. CTR program contract with Russian subcontracting firms to conduct vulnerability assessments of each site and to carry out initial site designs for the security upgrades. The new equipment at every site would be developed jointly by the two teams’ technical experts. Lutinski recalled that the negotiations were “very technical and complicated,” and that the Russian security experts were “excellent.”<sup>72</sup>

Discussions over each site’s equipment involved defining the costs, training and maintenance requirements for the command and control systems, the closed circuit television systems, interior and exterior detection systems, access control systems, vehicle and personnel barrier and access delay systems, hazardous and prohibited material detection systems, fire and safety systems, and guard force equipment. Site security and safety would be augmented with new firefighting equipment, armored weapons transport vehicles, snow removal units, and site preparation and maintenance equipment. Each site would have one access control point building and one guard force central control point building and an additional mobile guard force building at the larger national storage sites. All sites would have the three layers of the new security fencing with sensors. Altogether, there would be more than 3,000 items of equipment required



Defense Threat Reduction Agency

Armored weapons transport vehicle

to secure the largest and most complex national nuclear weapons storage sites. At times, Lutinski invited Department of Energy managers and representatives to the Moscow meetings to ensure that the two American bureaucracies, defense and energy, were agreeing to acquire and deliver the same types of equipment to the sites. Lutinski sought to keep the Russian Ministry of Defense’s costs constant from a logistical and maintenance perspective. In mid-June and mid-November 2005, the American-Russian Executive Reviews/Integrated Program Management Reviews were held in Moscow. On both occasions, Jim Reid, Pat Wakefield, John Byrd, Hunter Lutinski, Colonel General Valynkin, Major General Starodubstev and Lieutenant General Anatoly Y. Kolomiychenko participated in discussions on the plan and status of the large program to accelerate security upgrades for the nuclear weapons storage sites.<sup>73</sup>

In October 2005, a special session of the Joint Coordinating Committee met to discuss the final points in the U.S.-Russian proposal. U.S. representatives met in Moscow with Russian Generals Kolomiychenko and Starodubstev and representatives from the Strategic Rocket Forces, Russian Navy, and Russian Air Force. In a letter to the General Valynkin, Chief, 12<sup>th</sup> Main Directorate, Jim Reid and David Huizenga, his Department of Energy colleague, reiterated that the U.S. government would fund accelerated security upgrades at 15 storage sites: seven sites would be completed by the Department of Energy, and eight by the Department of Defense. After they identified the sites, they explained the U.S. government’s position on a number of issues. Most involved the Russian 12<sup>th</sup> Main Directorate’s requests for rapid security upgrades at other nuclear weapons

storage sites, new training programs and the necessity for constructing a new nuclear security training center in the Russian far eastern region. U.S. officials agreed with most of these requests, and they pledged to continue the CTR program's financial support for railroad and ground transportation of nuclear weapons and materials from the operational regiments to the storage depots.<sup>74</sup>

Following coordination and further discussions, senior officials signed new CTR U.S.-Russian implementing agreements on June 16, 2006 in Moscow, and the project work began.<sup>75</sup> Enhancements at the Russian nuclear weapons storage sites began with the Raytheon Technical Services Corporation serving as the U.S. government's integrating contractor. Since many of the security enhancements would be at storage sites in the Russian far eastern region,

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### U.S. Department of Energy

★ Seven sites in Russia

### U.S. Department of Defense

★ Eight sites in Russia

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General Valynkin insisted that the CTR program employ a Russian firm to serve as its integrating contractor. Aspect Conversion, a Russian firm, was hired and began working with Raytheon. Then, General Valynkin retired, and Colonel General Vladimir Nikolaevich Verkhovtsev, the new Chief, 12<sup>th</sup> Main Directorate, insisted on a different managerial arrangement that used Russian contractors to work directly at the sites and employed no Russian integrating contractor at all. The new Russian contractors, Tenzor, Escort Center and Eleron, were large industrial corporations with many years of experience working with the Ministry of Defense and Ministry of Atomic Energy. General Verkhovtsev demanded that these firms be funded by the CTR project to conduct vulnerability assessments, site designs, equipment requirements, site construction and equipment installation. U.S. CTR program managers Lutinski and Allison Johnston objected, and following several meetings and telephone exchanges, General Verkhovtsev agreed to retain the Aspect Conversion firm as a part of Raytheon's managerial team.<sup>76</sup>

During 2006 two other Russian storage site security projects were completed. Assisting the 12<sup>th</sup> Main Directorate

in developing, acquiring and installing a new automated accounting and inventory system for tracking strategic and tactical nuclear weapons destined for dismantlement was the Automated Inventory and Control Management System, another CTR project. It consisted of acquiring and installing new computers, network systems, a proof-of-concept facility and two central control points at 16 Russian nuclear weapons storage sites. The project manager acquired and delivered equipment to Moscow from 1995 to 1998 and the Russian directorate had installed it at the nuclear storage sites in subsequent years.<sup>77</sup> These new systems replaced a manual system the 12<sup>th</sup> Main Directorate used to track nuclear weapons slated for destruction. However, when the computers began to fail in 2006, the Ministry of Defense requested new computers that had more data storage and local and wide area network devices. Following installation of the new computer equipment, all 16 storage sites and central control points were linked into a Ministry of Defense wide area network. Then 12<sup>th</sup> Main Directorate officials requested a technological refreshment project be installed at 20 of the original sites and new computer systems put in at 13 new storage sites. This new request in 2006, identified as AICMS II, was approved and negotiations began to determine the equipment, interface devices, memory capacity, software and training needed to acquire and deliver the new systems.<sup>78</sup>

The second completed CTR project provided equipment and training to the guard forces stationed at nuclear weapons storage sites. This project began, at the insistence of the Russian 12<sup>th</sup> Main Directorate leaders, with the American equipment and training being tested first at the Russian Security Assessment and Training Center at Sergei Posad. At that facility, the CTR project manager constructed, using local firms, a new maintenance and logistics facility and then purchased and delivered 60 small arms training systems and three authorizing stations to the Russian center. Following testing, the 12<sup>th</sup> Main Directorate staff became responsible for transporting and placing the new systems at the nuclear weapons storage sites in the field. This project followed the same procedure in locating and equipping 12 CTR-procured live-fire shooting ranges. The program also funded operational and maintenance training at the range sites. The same project acquired and provided 1,200 radios for guard force personnel.<sup>79</sup>

By mid-year the cooperative U.S.-Russian project to accelerate the installation of security enhancements at

eight Russian nuclear weapons storage sites was well underway.<sup>80</sup> Raytheon had hired the recommended Russian subcontractors to initiate work in the field. Vulnerability assessments and site designs were underway. The American program managers had initiated acquisition of all fencing and equipment for the nuclear storage sites. They funded transporting the equipment to the various nuclear storage sites and developed a program plan, with costs, performance measures and a schedule. Then in the following months, Lutinski recalled, the schedule began to “slip.”<sup>81</sup> Russian General Staff directorate officers requested design changes at some storage sites. They asked for the construction of new buildings or the enlargement of certain existing buildings. They also wanted new boilers for specific sites and insisted that certain sites needed new water lines and new electrical power lines. Senior CTR managers, like John Byrd reviewed all of these requests with the Russian 12<sup>th</sup> Main Directorate general officers and certified they were necessary for the long-

term sustainment of the storage sites. These approvals and the bureaucratic negotiations took time to propose, consider, estimate and approve.

By mid-2007, work at all eight of the Russian weapons storage sites were up to 60 days behind schedule. By the time of the next CTR Executive Review/Integrated Program Management Review meetings in November 2007, Lutinski was very concerned about growth in the project’s requirements, increased costs, the general contractor’s performance and the lack of coordination between the contractors. He was also concerned about the attitude of the Russian military commanders and the lack of cooperation by state agencies and military directorates. Because construction permits for the sites were received one or two months late, actual construction on foundations and buildings did not start until September or October. Because of the Russian winters, the project’s final schedules and site completions were at risk.<sup>82</sup>



John T. Byrd and Colonel General Vladimir N. Verkhovtsev sign CTR agreement

## With Courage and Persistence

At the meeting, Lutinski told General Verkhovtsev that based on past experience Russian general contractors performed best “when senior MOD and DTRA leadership visited the sites.”<sup>83</sup> As a result, Russian contracting firms had improved their work and the leadership had identified areas that required intervention. Lutinski recommended that two teams be formed, one consisting of General Verkhovtsev and Director Byrd, the other of General Kolomiychenko and himself. Beginning in February 2008, they would travel out to the regions, make site visits and review all aspects of every project. General Verkhovtsev agreed. These senior-level site visits and general contractor reviews produced reports to the Russian commanding general on issues requiring immediate resolution.

General Verkhovtsev’s directorate had an enormous workload on this project. Not only was the directorate’s leadership involved, but there were hundreds of 12<sup>th</sup> Main Directorate nuclear security officers working at sites with the general contractors. The directorate had given clearances for the general contractors to have up to 150 personnel working at the national storage sites, 75 at the smaller sites and 40 at the rail transfer points. As construction work at the sites developed, however, Lutinski concluded that the general contractors did not manage closely the subcontractors’ productivity at the storage sites. Schedules slipped, costs increased.<sup>84</sup> In December 2007, a new coordinated schedule for the final eight sites was signed by representatives from the 12<sup>th</sup> Main Directorate and the general contractors, Raytheon and Aspect Conversion. Yet despite this new schedule, work schedules at the storage site continued to slip due to the general contractor’s poor labor mobilization and the slow transfer of acquired equipment.<sup>85</sup>

Into this situation stepped a Russian subcontractor, Aspect Conversion. In the final six months before the project’s deadline of December 2008, this firm sent its engineers, technicians and managers to every weapons storage site where they pressured the Russian general contractors and subcontractors to step up and complete the work. The 12<sup>th</sup> Main Directorate supported the Russian firm’s actions. Lutinski also went to Russia frequently, pressing Raytheon and Aspect Conversion to complete all the sub and main projects by the end of December. Late in that month, Byrd and Lutinski returned to Russia to make a final inspection. Lutinski, a small team of inspectors and Russian escorts flew out to the final nuclear weapons storage site in Russia’s far eastern region.

Lutinski recalled “there was nothing out there; it was difficult terrain; it was extremely cold, perhaps 40 below zero, and we did an inspection of the perimeter fencing ... outside. On the American team, the inspectors’ tears froze on their faces.”<sup>86</sup> Following the inspection, local Russians living and working at the site treated the American and Russian teams to a banquet, prepared by the wives of post’s officers. It was December 31, 2008; the project was completed.

While these final inspections were going on, at the White House, President Bush praised completion of the U.S.-Russian effort to improve security and accountability of nuclear weapons and materials.<sup>87</sup> That same month, Secretary of Energy Samuel S. Bodman flew to Moscow for a series of meetings with all of the Russian and American ministries and agencies to develop the Bratislava Nuclear Security Report.<sup>88</sup> Bodman stated the work had made “an enormous contribution to global security.”<sup>89</sup> Some cooperative work, specifically the conversion of Russian research reactors to use fuel with low-enriched uranium would take longer, but Bodman said it would be completed by 2010. Secretary



Hunter Lutinski

Defense Threat Reduction Agency

Bodman and Director Sergei Kiriyyenko, Russian Atomic Energy Ministry, presented the report to Russian President Dmitry Medvedev on December 25.<sup>90</sup> At DTRA, Director James A. Tegnelia stated in a press release that, “accelerating this work (nuclear weapons storage sites) two years ahead of what had been scheduled, required a massive effort, and a great deal of coordination and cooperation among the parties involved.”<sup>91</sup> Tegnelia praised the Russian Ministry of Defense for its “cooperation” and its “efforts.”

For all of the security upgrades at the Russian nuclear security storage sites, the CTR program spent \$388 million. This figure, Tegnelia explained, included the 16 security site upgrades already underway in early 2005, when Presidents Bush and Putin signed the Bratislava Initiative. This initiative accelerated security upgrades at the final national nuclear storage sites. In addition, the Department of Defense spent \$34 million in CTR funds expanding and improving the automated inventory control and management system, and \$24 million to design, construct and equip a new security system and training center in the Russian Far East. Another \$8 million in CTR funding was spent procuring and delivering 40 armored transport vehicles to assist Russian military forces to move nuclear warheads from the missile fields to railroad transfer points. The size and complexity of this security project, Tegnelia concluded, made it “one of the largest U.S.-Russian cooperative threat reduction efforts.”<sup>92</sup>

## **U.S.-Russian Strategic Offensive Arms Elimination programs, 2005-2008**

Simultaneous with this cooperative effort was a multi-sided program to eliminate Russia’s obsolete, decommissioned ballistic submarines, strategic missiles, launchers and launch sites. N.I. Shumkov led the Main Administration for Disposition of Weapons and Materials at the Russian Aviation and Space Agency, and he worked with American CTR program managers from 1994 to 2005. In Shumkov’s judgment, the Russian General Staff, Ministry of Defense and U.S. Department of Defense had developed important cooperative programs, using CTR funds, to eliminate decommissioned Russian ballistic submarines, strategic missile divisions, stationary missile launchers and missile deployment areas. He estimated that the U.S. CTR program had funded approximately 80 percent of the dismantlement of submarines, missiles and bombers in the 1990s, and

provided almost 50 percent of the funding in the Bush-Putin years.<sup>93</sup> All CTR programs and projects were done under the SOAE implementing agreement and applicable START Treaty provisions. Associated with these programs were multiple projects, including a large cooperative project to destroy Russia’s decommissioned solid-fueled rockets. The solid-fueled rocket engines provided power for the Strategic Rocket Force’s intercontinental, naval and rail and road-mobile missiles, the SS-24s, SS-25s, and SS-N-20s. These missiles had been developed and manufactured in Ukraine, which explained why the Russian Federation had no dismantlement facilities or technologies for destroying the rocket motors.

The Russian General Staff initiated all critical decisions concerning decommissioning the strategic weapon systems. The Russian Air and Space Agency was responsible for destroying the weapon systems after decommissioning and turnover. Shumkov worked closely with General Staff officers and American CTR policy and program managers to develop cooperative programs for destroying the Strategic Rocket Forces’ decommissioned strategic weapons systems. By 2003, the U.S.-Russian CTR program was robust, with U.S. integrating contractors and Russian subcontractors working at more than 30 ICBM/SLBM bases and destruction facilities and storage sites. Storage warehouses for SS-24 and SS-25 rocket motors had been designed and were under construction. SS-24 rail-mobile launchers, resting on special military trains, were being cut up and eliminated, and launch cars were being dismantled. SS-18 missiles were being removed from the silos, defueled, and sent into storage. The SS-18 and SS-19 fixed launch silos were being eliminated.<sup>94</sup>

Then, at the U.S.-Russian Executive Review meeting in January 2003, Shumkov announced to Jim Reid that the project to design and build a Solid Rocket Motor Destruction Facility at Votkinsk, to which the CTR program had committed \$106 million, had to be cancelled due to local opposition. Shumkov said he was working with the Russian General Staff to identify open burning facilities at Russian military bases at Kemerovo, Biysk and Perm. He focused on a site in Perm, one of the Strategic Rocket Forces’ largest military bases and its strategic rocket motor burn facility there. Using Russian government funding, he said the space agency would take over and renovate the burn facility at Perm, if MOD and DOD officials would negotiate a new implementing agreement to certify the new open burning methods and determine funding costs.<sup>95</sup>

Over the next 18 months, Reid and Shumkov negotiated the new terms. In the new agreement, American and Russian ministries agreed on a “cash-on-delivery” method for burning the SS-24 and SS-25 rocket motors. The Russian government would be responsible for burning the rocket fuels in the motor cases, and then would show the empty motor cases to the CTR program manager, who would certify their condition and arrange for payment. This agreement, negotiated and signed in 2004, worked well in subsequent years.<sup>96</sup> CTR policy officials also agreed to fund transportation of the SS-24/SS-25 missiles and rocket motors from the decommissioned missile regiments and divisions in the field into a holding facility at the Perm facility.

In 2005, the Russian General Staff planned to eliminate 56 SS-24 missiles and 347 SS-25 missiles at Perm and one other burn facility at Krasnoarmeysk by the end of 2011. U.S. CTR policy officials also agreed to assist in destroying 39 SS-24 rail mobile launchers and 302 SS-25 road mobile launchers by the end of 2011. In addition, the CTR program agreed to fund construction by Russian firms of a new SS-25 disassembly and elimination facility at Votkinsk, a new SS-25 launcher and support vehicle elimination facility at Piban’shur, and conversion of the SS-25 missile burning facility at Geodeziya. Russian contractors did the work,

supervised by U.S. integrating contractors who provided management oversight and verified the reports. During the years 2005 and 2006, U.S. CTR contractors worked at the following Russian military bases: Biysk, Barnaul, Bershet’, Bryansk, Irkutsk, Kansk, Khrizolitovyy, Kostroma, Krasnoyarsk, Krasnoarmeysk, Nenoksa, Nizhniy Tagil, Novosibirsk, Perm, Piban’shur, Plesetsk, Surovatikha, Votkinsk, Teykovo, Yoshkar-Ola, Yur’ya and Zlatoust.<sup>97</sup>

In August 2005, Senators Richard Lugar and Barack Obama traveled across the region, going first to Ukraine where Jim Reid, Director of CTR Policy, who was accompanying them, signed a new CTR biological weapons agreement and discussed eliminations of thousands of tons of ammunition, small arms and light weapons. Next, they toured Russian dismantlement facilities at Perm, and saw nuclear storage depots at Sartov. The trip resulted in the introduction of new legislation in the U.S. Senate Foreign Relations Committee, essay articles in the *New York Times*, and new initiatives to incorporate elimination of conventional weapons around the world into the cooperative threat reduction program.<sup>98</sup>

Senator Obama commented on the how neither the American government nor the public saw the threat from the Russian government not safeguarding its excess nuclear



U.S. CTR project sites in Russia, 2005-2006

warheads or destroying its obsolete strategic missiles. “The consequences of inaction can be enormous,” Obama said, “but I think that it’s one of the issues where until it’s too late, you don’t see a problem.”<sup>99</sup> Senator Lugar, co-author of the Nunn-Lugar Act of 1991, observed, “The question that is raised by members of the House and Senate ... and probably by a number of American taxpayers, who would hope that perhaps Russia would assume more and more of the responsibility and expense.”<sup>100</sup> At different times on the trip, Lugar referred to the cooperative program and its progress over the past 14 years. According to Lugar’s CTR scorecard, by 2005 the program had deactivated or destroyed across the region 6,750 nuclear warheads, 587 ICBMs, 483 ICBM silos, 32 ICBM mobile missile launchers, 150 strategic bombers, 789 nuclear air-to-surface missiles, 436 submarine missile launchers, 549 submarine launched ballistic missiles, 28 nuclear submarines and 194 nuclear test tunnels.<sup>101</sup>

U.S. CTR policy officials had agreed in the late 1990s to work with the Russian General Staff and Russian Air and Space Agency officials on funding programs to dismantle and destroy liquid-fueled intercontinental SS-18 and SS-19 missile systems. The Russians had 257 SS-18s and 171 SS-19 missiles. The Strategic Rocket Forces would decommission regiments of these fixed-site missiles in the field, and then turn the missiles, silos and auxiliary equipment over to the Russian Air and Space Agency for dismantlement and deconstruction. Shumkov, Reid and Byrd developed implementing agreements and projects for American and Russian contractors to do the actual work. Since SS-18s and SS-19s were liquid-fueled missiles, they were lifted from the silo launchers and defueled immediately. The missile’s toxic liquid propellant and oxidizer were removed and shipped via tanker trucks to Russian storage facilities. The missiles were shipped by rail to a CTR-renovated destruction facility at Surovatikha. Throughout this period American contractors worked with Russian firms and enterprises on these projects at Russian military bases at Dombarovskiy, Dzerzhinsk, Kartaly, Krasnoyarsk, Bershet’, Piban’shur, Surovatikha, Uzhur, Moshkovo, Ilyino, Mulyanka, Tambov, Turinskaya and Vanino.<sup>102</sup>

Another large CTR program worked with Russian shipyards to dismantle and destroy the Russian Navy’s strategic nuclear submarines and missiles. All eliminations were subject to START Treaty observations



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Senators Richard Lugar and Barack Obama in Ukraine

and inspections. U.S officials agreed to assist in the elimination of 572 strategic submarine launchers and dismantlement of 32 associated strategic submarines at four Russian shipyards: Zvezdochka and Sevmas, Nerpa, Zvezda and Northeast Regional Center. CTR

**Table 10.1 - Schedule of Russian submarine and missile launcher eliminations (2005-2008)**

Year	SSBN Submarines	SLBM Launchers
2005	2 Typhoons dismantled 1 Delta III dismantled 1 Delta I dismantled	The SLBM launchers on the Delta III were eliminated (quantity not listed)
2006	1 Typhoon dismantled 1 Delta III dismantled	No SLBM launchers were eliminated
2007	1 Typhoon dismantled	20 SLBM launchers eliminated
2008	1 Typhoon dismantled	No SLBM launchers were eliminated

Source: Reports, CTR Policy Office, DOD, *Cooperative Threat Reduction Annual Reports to Congress: FY 2007* (p. 16), *FY 2008* (pp. 3, 12-13), *FY 2009* (pp. 10-11) and *FY 2010* (pp. 2, 9).

funds provided support for towing the submarines from adjacent Russian naval ports to shipyards; eliminating ballistic missile launchers; defueling and transporting the submarines' spent nuclear fuel into interim storage casks, for sectioning and preparing nuclear submarine reactor-core compartments for long-term storage afloat; and for processing the submarines' low-level radioactive materials. All CTR funds were expended on fixed-priced contracts with the shipyards. This arrangement meant there were no U.S. integrating contractors involved. Instead, the U.S. CTR program funded contracts with the Russian shipyards and each project was monitored by program managers who traveled to the shipyards, reviewed the program and projects and inspected the dismantlement work. Twice a year the status of these submarine projects was reviewed in the U.S.-Russian Federation Executive Reviews/Integrated Program Management Reviews. The record of submarine and missile launcher eliminations for 2005 to 2008 was as follows.<sup>103</sup>

One provision in the American contracts with the Russian shipyards allowed them to collect scrap metal from the dismantled submarines and sell it on the international

market. In 2006, the Zvezdochka and Sevmash shipyards sold 4,600 tons of metal scrap for approximately \$800,000. The same year, Zvezda shipyard reported it generated 5,652 tons of scrap metal, which sold on the international market for \$2,436,311.<sup>104</sup> Two years later in 2008, the Zvezdochka shipyard sold 14,390 tons of metal scrap and received approximately \$3,800,000 in return.<sup>105</sup> The State Atomic Energy Council reported to the Russian government that, "in accordance with Russian legislation, funds received from the sale of materials recovered from dismantled nuclear submarines are deposited into an account specifically for these proceeds" and, "(they) can be used only for tasks related to dismantling nuclear submarines."<sup>106</sup> The council stated these funds would be used by the Russian shipyards to pay those workers who had prepared the metal scrap tonnage for sale, and to fund the workers who were forming up the reactor blocks from the nuclear submarines. Part of the funds would also finance towing of the reactor blocks and handling of the spent nuclear fuels unrelated to the CTR-funded submarine work. As the decade unfolded, the amount of CTR-funded nuclear submarine dismantlement work decreased due to internal Russian government decisions.



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## Eliminating Ukraine's SS-24 rocket motors: new initiative

In working with Ukraine, CTR policy officials recognized that the program had a commitment to assist the Ukrainian government with elimination of 163 SS-24 solid rocket motors. These rocket motors had been stored in large warehouses in Pavlograd, Ukraine, a former Soviet missile manufacturing and industrial city. In 2003, when the Department of Defense re-scoped every CTR project, it decided to stop funding the SS-24 pilot plant at Pavlograd that had been designed to wash out the SS-24 solid rocket motors and mix the solid fuel with kerosene, producing an explosive compound for the mining industry. In Washington, analysts in the CTR policy office recommended ending funding the pilot project because it was over budget and faced a series of cost escalations. Instead, U.S. officials recommended that the Ukrainian government consider burning the SS-24 rocket motors in their casings, as the Russian government had proposed to do with its SS-24 and SS-25 rocket motors.<sup>107</sup> In Russia, the CTR program had agreed to assist the Ministry of Defense in dismantling the missiles and transporting the

rocket motors to a military base at Perm, where the Russian ministry would eliminate them through open burning. When burned, the program manager agreed to reimburse the Russian Ministry of Defense for a fixed payment per rocket motor. When this solution was proposed to the Ukrainian government, they rejected it. For four years, bilateral meetings and discussion produced no solution.

Then in 2007 senior CTR policy officials reached an agreement with the Ukrainian government, in which the CTR program would provide assistance for elimination of the solid rocket motors. Jim Reid stated that the program would support the elimination work in Pavlograd by providing "firm fixed price" payments for the empty rocket motor casing.<sup>108</sup> Ukraine, he declared, would be responsible for removing the propellant using "a method of its choice." The CTR payment would be no higher than the ones made for the same type of rocket motors in Russia. Reid recommended that CTR program managers develop plans with the Ukrainian ministry to include transparency in their elimination process, and he requested they remove propellant from the least safe solid rocket motors first.<sup>109</sup> In carrying out this project, Lt. Commander Robert Bridges, the CTR project



Elimination of SS-24 ICBMs, Pavlograd

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manager, requested that Washington Group International, the American integrating contractor in Pavlograd, monitor, record and certify payments for eliminating the solid rocket motors. This firm had constructed the large storage warehouses holding the 163 SS-24 rocket motors and had maintained the facility's temperature, humidity and fire suppression systems since 2000. The program manager awarded a contract to Washington Group International for \$22 million for continuation of its warehouse maintenance work, plus overseeing and paying the Ukrainian ministry for the empty rocket motor casings from 2008 to 2013.<sup>110</sup> Once these contracts had been set, the Ukrainians began eliminating the rocket motors. They eliminated three in 2008, and following a delay, three more in 2009. The bulk of all rocket motor eliminations would be done from 2010 to 2012.

### **U.S. support for the Russia's Chemical Weapons Disposal Facility at Shchuch'ye**

Construction on the large CW disposal complex at Shchuch'ye began in April 2003. Congress appropriated and the Bush administration released \$50 million in CTR funds in 2002, \$137.3 million in 2003, \$190.3 million in 2004 and \$155 million in 2005.<sup>111</sup> The United States agreed to build a modern chemical weapons disposal facility at Shchuch'ye to destroy Russia's 1.9 million nerve agent-filled, man-portable, tube, and rocket artillery shells and bulk-filled rocket warheads. During the five-year design phase, CTR policy and program managers agreed with their Russian counterparts that the complex project would include, with Russian approval, U.S. firms designing the facility's destruction processes and buildings, managing the construction, acquiring the equipment, and then delivering, installing, conducting systems integration, training and facility startup. Once the new facility was in operation, nerve agents would be removed from the munitions and neutralized, and the drained munitions thermally decontaminated. CTR policy officials agreed to build additional facilities at the Shchuch'ye complex to treat the neutralized materials, manufacture the chemicals used to neutralize the nerve agents and safely store the process wastes. In 2004, Jim Reid set a cap on U.S. assistance for the project at \$1.039 billion, making this chemical weapons disposal project the largest CTR-funded industrial construction project in Russia, ever.<sup>112</sup>

When it signed the United Nations' Chemical Weapons Convention in 1997, the Russian government declared that it possessed the world's largest chemical weapons stockpile, registering at slightly more than 44,000 tons. Russia's chemical weapons were located at seven CW storage sites, and the government planned to establish elimination sites at each facility and destroy the weapons in accordance with the treaty's protocols and schedule. However, the government did not provide sufficient funds for this work. Hence by the end of 2004, Russia had destroyed less than three percent of its chemical weapons stockpiles. To speed up elimination, President Putin signed the federal budget in late December 2004, providing \$400 million for chemical weapons destruction.<sup>113</sup>

In the wake of the G-8's 2002 Global Partnership Against WMD, other nations began to obligate funds for assisting Russia in eliminating its chemical weapons. In 2002, Germany began working with Russia to design and construct a new CW elimination plant at Kambarka. That site had 6,989 tons of lewisite in bulk condition. Germany had been working on another disposal plant with Russia for more than a decade; it provided money and technical expertise to design, construct and operate in 2003 the first modern CW disposal facility at Gornyy. It destroyed mustard gas, lewisite, and blister agents and weapons. Then, Zinovy Pak, Director, Russian Munitions Administration, announced that Russia, Great Britain, Italy, Norway, European Union, Canada and other contributing nations planned to fund construction of a second disposal facility at Shchuch'ye. It would process the warheads and destroy the toxic agents and neutralized munitions. Pak planned to transport the CW munitions stored at the Kizner CW storage site to the new storage and disposal facilities at Shchuch'ye. The two new CW disposal facilities would be able to destroy 1,873 tons of nerve agents per year, starting in 2008 and finishing in 2012, the date established by the international council governing the UN's Chemical Weapons Convention for completing all CW eliminations.<sup>114</sup>

During construction and equipping of the Shchuch'ye Chemical Weapons Disposal Facility, Parsons Delaware, the U.S. integrating contractor, provided contract oversight and engineering management with major Russian construction firms. Parsons' managers worked with major American subcontractors: SAIC, Washington Group International, EG&G and Illinois Institute of Technology Research Institute.<sup>115</sup> During the planning and construction phases,



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Chemical weapon nerve agents in shells

all projects were coordinated with Colonel Victor I. Serbin of the Russian Munitions Agency. By March 2004, a 1:50 scale model plant, constructed to follow the actual chemical destruction process, started operations and was validated over a one-year period. At the same time, testing began on the equipment prototypes slated to remove nerve agents from the munitions.

Both of these developments followed the two-stage destruction process for disposing of chemical weapons, which was favored by the Russian Munitions Agency. Stage one was chemical neutralization, and stage two was bituminization of the neutralized reaction mass into large solidified asphalt blocks. These blocks were to be deposited into bunkers at the waste storage site. During that year, Russian construction firms began work on foundations and superstructures for the main destruction plant, and foundations for the administration building and fire station. Construction also started on the underground utilities - sewers, hazardous response station, fire water area, waste water area and fire water pumping station. Contractors finished the Shchuch'ye facility's specialist camp in 2004. By the end of the year, the complex's design work was 91 percent complete, and construction was 18 percent finished.<sup>116</sup>

Over the next three years, 2005-2008, construction continued at the CW disposal complex at Shchuch'ye. At the semiannual Executive Review/ Integrated Program Management Reviews in Moscow, General Victor I. Kholstov, Deputy Director, and Colonel Serbin, project manager, met with Reid, Wakefield, Byrd, and Paul McNelly, the U.S. project manager. They went over the schedule, multi-entry visas, site access, value added tax, competition for construction

contracts, coordination with other donor nations, joint plans and the status of the work. At one of the meetings in June 2005, Colonel Serbin briefed the current funding divisions for the Shchuch'ye complex: 45 percent came from the Russian Federation, 43 percent from the United States, and 12 percent from the other nations.<sup>117</sup> At Shchuch'ye, the Netherlands, Great Britain, Canada, Czech Republic, Italy and Switzerland funded the purchase and installation of specific equipment. However, the equipment arrived late and many projects were delayed. In 2006 the American integrating contractor, Parsons Delaware, was unable to obtain reasonable bids from Russian subcontracting firms for constructing two critical buildings in the CW destruction process. In August, the CTR policy office directed Parsons to terminate further contract negotiations and ordered a new baseline review for the project. Out of that review and intense discussions with Russian officials, a new strategy emerged for completing the work at Shchuch'ye.<sup>118</sup>

A new trilateral acquisition policy was approved in May 2007, with the signing of an amendment to the U.S.-Russian Federation Chemical Weapons Destruction CTR implementing agreement. It began with a joint commitment to reorganize the managerial system for the entire project.<sup>119</sup> The new system outlined new roles and responsibilities for the United States and Russia. It shifted responsibility to the Russian Federal Agency for Industry, successor to the Russian Munitions Agency, for awarding all contracts, managing daily construction activities and



Flags of the United States, Italy, the Netherlands, Switzerland, Czech Republic, Russia and Canada

overseeing the Russian firms working at Shchuch'ye. The Department of Defense's CTR responsibility would be to verify that construction and installation work had been completed and to pay the invoices. The agreement established a joint managerial plan, required monthly coordination meetings and specified involvement of a third party. Vneshtroimport, a Russian firm reviewed invoices from the Federal Agency for Industry and forwarded them to Parsons Delaware for validation and payment. Within seven months of this amendment, the Defense Department's CTR program office transferred responsibility for all remaining construction projects at Shchuch'ye to the Federal Agency for Industry. By December 2007 the Russian agency had awarded contracts to Russian firms for the remaining construction work. Significantly, this new strategy assigned ownership of the mission to build and equip the Chemical Weapons Destruction Facility to the Russian agency. The Russian government accepted responsibility for funding any budgetary requirements beyond the \$1.0392 billion the Americans had committed for the project.<sup>120</sup>

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## Shchuch'ye CW Destruction Facility

- ★ U.S. involved for 14 years
  - ★ U.S. spent \$1.039 billion
  - ★ Facility opened May 2009
- 

Over 14 years, 1993-2007, the U.S. CTR program spent \$662.4 million to carry out the planning and process facility designs, preconstruction preparation, equipment development and procurement and construction of the CW destruction complex at Shchuch'ye. By 2007, it was more than 50 percent completed. Now, with the new trilateral management strategy, the CTR program committed to provide an additional \$247.8 million to pay for the Russian agency's construction and equipment contracts with Russian contractors: Stroytransgaz, Spetsstroy, ENPO Neorganika and Giprosintez. Parsons Delaware received \$73 million to pay Vneshtroimport, its Russian contractor. This firm would verify that work had been completed and would process invoices, deliver equipment and provide reports to the CTR program manager. Defense Department officials favored the new strategy because it led to closer cooperation between

U.S. and Russian officials, and it provided direction to the Russian Federal Agency for Industry to complete the complex project on schedule and within budget. If it did not do so, the Russian government would incur additional costs and would not meet its international commitments under the Chemical Weapons Convention.<sup>121</sup>

As this new strategy was being implemented, Senator Richard Lugar and former Senator Sam Nunn arrived at Shchuch'ye to tour the CW destruction facility. It was August 2007 and the CTR program had passed its 15<sup>th</sup> anniversary. Following a tour of the construction site, Senator Lugar spoke to reporters:

"I have visited Shchuch'ye on two previous occasions and I am convinced that the weapons stored here must be dismantled quickly and safely. I look forward to the day when the last of these horrific weapons are eliminated and the dire threat they pose to all nations is removed. Progress on this project has been a particular focus of mine for the past seven years, seeking amendments to permit construction to continue and making sure that my colleagues in Congress understand the necessity for this work. ... This project is essential to the national security of the United States. I have personally expressed my firm desire to see success to President Bush, Secretary Rice and others, and with dedicated efforts, we are succeeding."<sup>122</sup>

Work continued throughout the next two years. Then in May 2009, Russia and the United States formally opened the Shchuch'ye chemical weapons disposal facility, the largest CW elimination complex in the world.<sup>123</sup> The new facility had 25 buildings located across 250 acres.<sup>124</sup> The small town of Shchuch'ye was located approximately seven miles from the CW stockpile, and the two sites were connected by a special railroad line. Construction of the Shchuch'ye complex had been financed with U.S. CTR funds (\$1.039 billion), Russian government (\$250 million), and other nations' contributions (\$200 million). Once opened and operational, the CW disposal facility would neutralize and destroy 6,569 tons of chemical materials, including VX and sarin nerve agents stored in more than 1.9 million artillery and other munitions. The Shchuch'ye CW disposal facility was one of five Russian government destruction plants

for eliminating chemical weapons stockpiles. The others, Gorny, Kambarka, Nizhny Novgorod and Maradykovsky, were all in operation destroying chemical weapons. By the end of 2009, the Russian government expected to destroy 45 percent of its chemical weapons stockpiles.<sup>125</sup>

At the dedication ceremony in May 2009, officials, scientists and workers from Russia, United States, Great Britain, France and Canada gathered as Russian Industry Minister Victor Khristenko spoke: "Today, a fantastic team of experts from different countries is gathered at this site." He continued, "This is very logical because chemical disarmament is an issue of the utmost global importance and the facility being launched is truly unique. In 2003, we started the destruction of one percent of chemical weapons stockpiles. By 2007 we destroyed 20 percent, and to date we have destroyed 36.6 percent"<sup>126</sup> The United States representative, Senator Richard Lugar noted, "The road to this day has not been smooth. There have been delays caused by the apprehensions of the U.S. Congress; bureaucratic obstruction; problems with Russian funding; and contractor disputes. Through it all, the Americans and Russians worked together to resolve the difficult challenges. ... The experience of the Nunn-Lugar program in Russia has demonstrated that the threat of weapons of mass destruction can lead to extraordinary outcomes based on mutual interests."<sup>127</sup>

## New CTR directions: WMD Proliferation Prevention Initiative

The CTR program began developing in new directions just as relations between Russia and the United States changed. Putin's government, benefitting from the global rise in gas and oil prices, developed an assertive anti-American foreign policy. Bush's administration, struggling with two wars in Iraq and Afghanistan, turned away from engagement with Russia. Except for the areas of nonproliferation and antiterrorism, the two nations had few cooperative policies, programs or issues.<sup>128</sup> In 2003, the U.S. Defense Department received from Congress \$40 million to start the WMD Proliferation Prevention Initiative with selective nations of the former Soviet Union – Uzbekistan, Kazakhstan, Ukraine and Azerbaijan. "Increased efforts by terrorists to secure WMD and WMD components, materials and expertise," CTR policy officials reported to Congress in 2004, "have demonstrated a need to improve the security of the non-Russian FSU states' borders."<sup>129</sup>

During 2003 and 2004, U.S. officials met with ministerial representatives from Uzbekistan, Kazakhstan, Ukraine and Azerbaijan, and began negotiating specific agreements, programs and projects. Working under the CTR WMD Proliferation Prevention Initiative, these officials developed new implementing agreements, new cooperative



Dedication ceremony of the Chemical Weapons Disposal Facility at Shchuch'ye, May 2009

## With Courage and Persistence

maritime and land border programs, and specific projects to acquire, deliver, and use new detection technologies and equipment. As these programs were being developed, Pat Wakefield, Deputy Assistant Secretary of Defense for Chemical Demilitarization and Threat Reduction, insisted they be implemented in spiral acquisition and development phases.<sup>130</sup> When Lisa Bronson, Deputy Undersecretary of Defense for Defense Technology Security Policy and Counterproliferation, announced this new initiative to Congress she admitted there would be “risks” of engagement with other nations, but stated that the new programs would be implemented in “close” coordination with other U.S. agencies and departments.<sup>131</sup>

The Caspian Sea Maritime Proliferation Prevention program involved improving Azerbaijani and Kazakhstan’s customs services and navies to detect and interdict vessels suspected of carrying WMD or materials as they transited the waters of the Caspian Sea. The first phase, to be completed in one year, included defining the standards for initial operating capability, repairing or upgrading patrol boats and support vessels, installing radar and data networks, and enhancing maintenance, logistics, and training systems. In 2004, Bill Youngstrom, CTR program manager, acquired and delivered to Lieutenant General Elchin Guliyev, Commander, State Border Guards of Azerbaijan, a “Quick Equipment” support package of the materials.<sup>132</sup> Washington Group International became the integrating contractor with the role of planning and managing construction, repair and upgrading of the Azerbaijani border guard’s command and control systems, maintenance and logistics facilities, and construction of new coastal operating facilities on the nation’s southern coast. In Kazakhstan there were negotiations, but no agreements or programs.

By 2006, the CTR program had established, at the Azerbaijan State Border Guards’ direction, a new operational command and control center and had installed linkages to short and long-range radar systems. The program also acquired and delivered WMD detection and boarding equipment, constructed the Astara Boat Basin and established a comprehensive training program with the State Border Service and Coast Guard. In June 2006, the Department of Defense’s International Counterproliferation Program conducted a bilateral WMD proliferation prevention exercise with participation of the Azerbaijan border service and coast guards. In two days at sea, a series of events tested the basic



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Upgraded Azerbaijan patrol boat and support vessel under the Caspian Sea Maritime Proliferation Prevention program

capability of the Azerbaijani forces to detect and prevent the transit of vessels with WMD materials.<sup>133</sup>

When the U.S.-Azerbaijan Executive Review was held in Baku in June 2007, U.S. Ambassador Anne E. Derse, Jim Reid, John Byrd, and CTR program and project managers were joined by Azerbaijan officials, General Guliyev, Commander

of the State Border Service, Major General Ilham Mehdiyev, deputy commander, Vice Admiral Shahin Soltanov, and Ramiz Tagiyev, Minister of National Security.<sup>134</sup> Since there were no significant policy issues, discussions turned to a review of the program and the issue of a concept of operations. This CTR program supported the repair and operational testing of two patrol vessels, and it developed ship repair and maintenance capabilities within the Azerbaijani State Border Services. In addition to small-boat and boarding-team training, the program developed initial designs and site surveys for constructing a new maritime surveillance radar site on Chilov Island. To be completed the following year, the new radar site would be operated by Azerbaijan's Navy; it would enhance the surveillance of maritime traffic in a sector of the Caspian Sea. During 2007 and 2008, U.S. Embassy officials organized a series of meetings with the Azerbaijani Navy and State Border Services, along with other nations' naval officials, to discuss development of a concept of operations.<sup>135</sup> In Kazakhstan, a similar joint CTR program was developed, a contractor hired, and equipment acquired and delivered. However, difficulties and challenges arose with the government agency responsible and the program ended in late 2008.<sup>136</sup>

In Uzbekistan, when the United States signed the Border Security Assistance implementing agreement in 2003, it pledged that the Department of Defense's CTR program would provide portal monitoring detection equipment, training and other support to the Minister of Defense and the State Customs Service. Since the September 11, 2001 attacks on New York and Washington, D.C. and the wars in Afghanistan and Iraq, the United States had maintained a close relationship with the Uzbekistan government. For several years, the U.S. Air Force used the Karshi-Khanabad air base in southeastern Uzbekistan to fly support missions against al-Qaeda and Taliban forces in Afghanistan.<sup>137</sup> The Departments of State and Defense developed programs that provided technical assistance, equipment and training to enhance Uzbekistan's State Customs Service's control over its borders and to develop its capabilities to interdict the illegal movement of narcotics, people and goods, including the smuggling of potential WMD materials.

The new \$31 million CTR program had three phases. The initial phase consisted of site surveys of the border ports of entry by the specialists from the Uzbek State Customs Service and U.S. Lawrence Livermore National Laboratory.<sup>138</sup> Completed in 2004, this survey determined which Uzbek

ports of entry should receive the new portal monitoring detection equipment. In the second phase, Washington Group International began to hire local firms to install the portal monitors, deliver the detectors, upgrade communications and develop new training programs. For three years, 2004-2007, the CTR program managers funded the installation of new portal monitors, including communications upgrades, at 19 points of entry across Uzbekistan. Operations transitioned to the nation's State Customs Committee and on two occasions shipments of low-level radioactive materials were detected. In 2008, when the Uzbek government halted cooperation with the United States; the Defense Department's CTR policy officials ended the program.<sup>139</sup>

Another CTR WMD Proliferation Prevention Initiative program developed with Ukraine. Following negotiations between Jim Reid, CTR policy office, and General M.M. Lytvyn, Commander, Ukrainian State Border Guard Service, the two sides agreed to use the Export Control implementing agreement to provide technical assistance, equipment and training to Ukraine. General Lytvyn insisted the new program begin with a survey and then follow with installation of the new WMD detection equipment on the Ukrainian-Moldovan border. Then, once a test bed had been established, United States and Ukrainian officials would expand the program into proliferation prevention projects on the adjacent waters of the Black Sea and the Sea of Azov. The objective was to develop the Ukrainian State Border Guard Service's capability to monitor, detect and interdict illicit trafficking in WMD and related materials transiting across specific borders and through key seaports. During 2005, Raytheon, the American integrating contractor used local firms to construct improvements in Ukraine's State Border Guard Service's command and control systems, voice communications, surveillance, mobility, detection and interdiction functions. Raytheon's managers worked closely with the State Customs Service and the State Guard Service officers and men to develop a geographical test bed at the Ukrainian-Moldovan border at Kuchurgan. Successful, the new WMD detection equipment and communications enhancements were placed at other border crossing points.<sup>140</sup>

The maritime part of this U.S.-Ukrainian project began in 2006 when the American contractor and Ukrainian firms worked in the ports at Odessa and Illichevsk to procure and install new WMD detection and interdiction equipment, and upgrade the guard services patrol boats' surveillance,

communications and navigation equipment. New rigid-hull inflatable boats and boarding-party equipment were also provided to State Border Guards at Izmail, Illichevsk and Odessa. Both phases of this CTR program were coordinated with the U.S. Department of Energy and its Second Line of Defense program and the European Union's program to enhance border security and WMD detection and interdiction operations. As 2008 ended, CTR program managers continued carrying out land border and maritime sea projects with the Ukrainian government. The program also agreed to provide limited assistance to the State Border Guard Service in monitoring the Chernobyl Exclusion Zone.<sup>141</sup>

## Biological Threat Reduction Program Expands

When the Defense Department's CTR policy officials refocused the program to deal with the administration's global war on terrorism, they concentrated on developing programs and projects with those nations that had inherited biological laboratories, research institutes and sentinel stations associated with the Soviet Union's biological weapons programs. During the Cold War, the Soviet Union had developed the largest biological weapons program in the world. A decade after the collapse and the formation of 15 new states, along with the rise of international terrorism, questions arose about the security, safety and number of dangerous pathogens at these research institutes and field stations. Unlike the inherited nuclear and chemical weapons, there was no central government ministry or bureaucracy in Moscow to negotiate with on requirements for new programs.

Instead Jim Reid and Andrew Weber, senior CTR policy officials, traveled to the Russian biological research institute and negotiated biosecurity assistance and bioresearch projects. "We found," Weber explained, "that peer-to-peer contact between scientists was the best way to find out what was really going on the ground and in the labs."<sup>142</sup> After terrorists attacked the United States in 2001, Weber and Michael Balady, from DTRA's CTR program directorate, traveled to Kazakhstan, Uzbekistan, Ukraine and Georgia, and met with the biological laboratory directors and health ministers explaining the CTR assistance programs, and seeking partner nations for developing new projects to secure biological pathogens, establish collaborative research projects and set up new joint bioterrorism prevention efforts.

"Certainly," Weber said, "after 9/11 we were much more concerned with the leakage of materials, pathogens and expertise to potential terrorist groups."<sup>143</sup>

The Biological Weapons Proliferation Prevention program began when Reid and Weber reviewed the status of current CTR projects with the former biological research facilities and institutes in all of the nations, including Russia. Already underway were a few projects to dismantle and destroy the BW production facility at Stepnogorsk, Kazakhstan and to decommission and decontaminate another facility with excess dual-capacity biological stocks in Biokombinat, Georgia. Another CTR-funded biological weapons destruction project collected and detoxified approximately 165 tons of abandoned anthrax materials located on an island in the Aral Sea in Uzbekistan. These three projects, known as the BW Infrastructure Elimination program ran from 1998 to 2007, when they were all completed. A second, larger CTR assistance program, Biosecurity and Biosafety, focused on instituting cooperative security and safety projects at existing biological repositories and research laboratories in Azerbaijan, Russia, Kazakhstan, Ukraine, Uzbekistan and Georgia. The program's objective was to support the research institutes in consolidating all dangerous pathogens and in installing procedures and facilities for the safe, secure storage and handling of the pathogens and other materials used for legitimate public health research purposes.

In Russia, Weber and Reid worked with lab directors and scientists and they developed cooperative projects with seven biological research centers and scientific institutes; many were part of the Russian BW manufacturing Biopreparat complex located in Moscow, St. Petersburg, Novosibirsk, Obolensk, Vladimir, Golitsino and Pokrov. The new CTR projects assisted these institutes in redirecting their scientists and projects to other research areas. In Washington, D.C., a National Research Council report established the rationale and framework for these initial U.S.-Russian biological projects.<sup>144</sup> To carry out the cooperative projects, Bechtel began working with Russian biological weapons institute directors at the State Research Center of Virology and Biotechnology (Vector) in Novosibirsk, State Research Center for Applied Microbiology in Obolensk, the All Russia Research Institute for Animal Protection in Vladimir, the Russian Scientific Institute of Pathology in Golitsino and the Biologics Plant in Pokrov.<sup>145</sup> Weber, Balady and staff officials traveled to Russia

frequently, attending scientific conferences and holding discussions with directors of the research institutes. They also traveled to meet with the national research institute directors in Kazakhstan, Uzbekistan and Ukraine. Weber and Reid committed the CTR program to funding and managing “quick fix” security improvements at the national research laboratories. Because of its scope, this initiative grew quickly and CTR policy officials increased their five-year budget estimates for 2002 -2007 for the biosecurity and biosafety program to Congress from \$95.4 to \$182 million.<sup>146</sup>

In 2003, CTR policy office officials assigned DTRA’s CTR program directorate responsibility for developing, managing and implementing a new Threat Agent Detection and Response program with Central Asian and Caucasus nations, excluding Russia.<sup>147</sup> This new program was based on a series of concepts developed over the winter months by a small team of policy and program experts consisting of Andrew Weber, Roger Breeze, Mike Weaver, Shawn Cali and Mike Favreau. Rather quickly, the Threat Agent Detection and Response program became one of the most important biological threat reduction efforts the United States was offering to the new nations. In the beginning, Weber and American CTR program specialists explained the new concept to directors and scientists working at the national biological research institutes in Georgia, Azerbaijan, Kazakhstan and Uzbekistan. Together, they planned to develop a series of cooperative projects that would identify, consolidate and secure especially dangerous pathogens that posed special risks if stolen, diverted, accidentally released or used by terrorists.

These pathogens could be human or animal viruses and strains. “The focus,” Weber explained, “was on early warning against disease outbreaks or for infectious disease surveillance.”<sup>148</sup> The program would redirect scientists and doctors with dual-use skills toward public health work. It would also consolidate the dangerous pathogen collections into a new or existing central research laboratory where scientists working with modern diagnostic equipment could identify and rapidly classify strains and place data into response networks for national, regional and world scientific communities.<sup>149</sup> Scientists working in the new central reference laboratories would work with technicians in field sentinel stations to detect suspicious outbreaks of diseases among human and animal populations. Weber explained, “If either a natural disease outbreak or a bio-terrorist attack occurred, the best defense we had against it was early warning

and early identification ... to contain it before it became an epidemic or a pandemic.”<sup>150</sup>

As these multifaceted biological programs developed they influenced the recipient nations’ public health and agricultural livestock policies and programs. The new Biological Threat Detection and Response Program contained new communications and data storage systems to manage and rapidly disseminate the data from national surveillance systems. It contained a concept for establishing and equipping mobile epidemiological response teams to investigate possible outbreaks, fix their origins and conduct assessments for instituting ways of prevention. To minimize the need for retaining pathogens located and stored at

- 
- ★ Threat Agent Detection and Response
  - ★ Cooperative Biological Threat Reduction
  - ★ Human and animal viruses and strains
  - ★ New Focus: Public Health, Disease Surveillance
- 

remote field stations, the program developed safe, secure and efficient pathogen transportation equipment that met international standards for biosafety and biosecurity. Finally, the program contained opportunities to train personnel in biosecurity, biosafety diagnostics and epidemiology.

Under this program, some CTR projects worked with the national research institutes to develop new networks linking disease surveillance stations and the diagnostic laboratories at provincial, national and regional levels that could be tied into an existing international electronic disease surveillance system. The objective was to establish across the region a rapid, accurate reporting system for outbreaks of diseases, biological attacks and emerging pandemics using scientists at the national labs, the threat agent detection and response network, and the existing international disease surveillance system. “The big leap in our thinking,” Weber recalled, “was that disease surveillance against these threat agents, or the diseases caused by the threat agents, many of which were endemic in Central Asia and the Caucasus, in itself reduced the

threat.”<sup>151</sup> Within a few years, several bilateral Threat Agent Detection and Response projects were underway in Georgia, Azerbaijan, Uzbekistan, Ukraine and Kazakhstan, with funding exceeding \$210 million. Significantly, these new cooperative projects moved the entire CTR program away from dismantling and eliminating excessive nuclear and chemical weapons of the Cold War era and directed it toward new collaborative biological programs with new nations, creating new systems and networks to confront more immediate contemporary threats.<sup>152</sup>

Over time, CTR policy and program managers merged the biosecurity and biosafety programs with the threat agent detection and response programs. In Russia, the biosecurity and biosafety programs continued, while in the other nations, the biological detection and response programs expanded, adding more nations and projects. By 2004 and 2005, CTR program managers developed a multifaceted program, now called the Biological Threat Reduction Program, to work on new projects with their national counterparts in the five Eurasian nations. It had the following parts:

- New secure central reference laboratories to rapidly diagnose viral and bacterial diseases (human and animal), equipped with modern diagnostic capabilities and operated at U.S. biosecurity and biosafety standards.
- A new system of oblast-level human and veterinary Epidemiological Monitoring Modules without dangerous pathogen collections. These modules included networked sentinel stations with trained personnel to detect and respond to suspicious outbreaks among human and animal populations.
- New standardized, quality-assured diagnostic and surveillance procedures that could ensure consistent and reliable results that can be accessed in real time via links to DOD and U.S. Centers for Disease Control and Prevention’s Laboratory Resource Network.
- New state of the art diagnostic tests that provide definitive results at the oblast level, thus minimizing the transport of dangerous pathogens and eliminating the need to store

dangerous pathogens for diagnostic purposes at multiple field stations.

- New communications and data storage systems to analyze, interpret, manage, and disseminate rapidly data generated by the surveillance system.
- Secure, safe, and efficient pathogen transportation capabilities that follow U.S. standards for biosecurity and biosafety.
- Initial and recurring training of personnel in biosecurity, biosafety, bioethics, proliferation prevention, diagnostics, epidemiology, information technology, facilities and equipment operations, maintenance, and quality control and assurance.<sup>153</sup>

The engagement grew rapidly with CTR program managers adding cooperative projects for the new biological laboratories, institutes and sentinel stations each year. Kazakhstan, Uzbekistan and Georgia requested new central reference laboratories and modern diagnostic equipment. As the program grew the revised Congressional five-year budget projection increased to \$486 million from 2004 to 2009. The cooperative institutions by country were:<sup>154</sup>

**Kazakhstan:**

**Almaty** – Kazakh Scientific Center for Quarantine and Zoonotic Diseases

**Almaty** – Central Sanitary and Epidemiologic Service Laboratory

**Almaty** – Ministry of Defense Medical Department

**Astana** – Central Veterinary Laboratory

**Otar** – Scientific Research Agricultural Institute of the National Biotechnology

**Center Various** – Sentinel Stations associated with Kazakh Scientific Center for Quarantine and Zoonotic Diseases and the Central Sanitary and Epidemiologic Service System

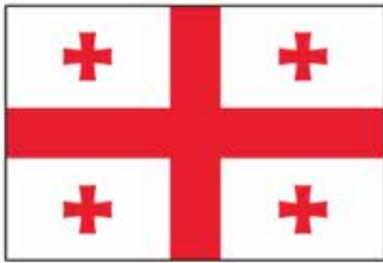
**Uzbekistan:**

**Samarkand** – Scientific Research Institute of the Veterinary Sciences

**Tashkent** – Research Institute of Virology

**Tashkent** – Center for Prophylaxis and Quarantine of Most Hazardous Infections

**Tashkent** – Research Institute of Epidemiology, Microbiology, and Infectious Diseases



Flags of Georgia, Kazakhstan and Uzbekistan

**Tashkent** – Central Veterinary Laboratory

**Tashkent** – Ministry of Defense Medical Department

**Various** – Sentinel Stations associated with Center for Prophylaxis and Quarantine of Most Hazardous Infections and the Research Institute of Epidemiology, Microbiology, and Infectious Diseases

**Georgia:**

**Tbilisi** – National Center for Disease Control of Georgia

**Tbilisi** – Eliava Institute of Bacteriophage, Microbiology and Virology

**Tbilisi** – Georgia Center for Veterinary Diagnostics and Expertise

**Tbilisi** – Central Veterinary Laboratory

**Various** – Sentinel Stations associated with the National Center for Disease Control

*Source: Report, CTR Policy Office, DOD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006, pp. 48-49.*

As in other scientific fields, scientists working in human biology and animal husbandry were linked through national and international networks. Improving this linkage was one of the major objectives of the Biological Threat Reduction program. By developing a network of disease surveillance and diagnostic laboratories in Kazakhstan, Uzbekistan, Georgia, Ukraine and Azerbaijan that could be linked into an electronic integrated disease surveillance system, there would be the capacity to rapidly report outbreaks of diseases to a broader group of scientists. All of these nations were member states of the UN's World Health Organization and the World Organization for Animal Health, which required reporting of disease outbreaks within 24 hours. The CTR programs and projects facilitated these nations in meeting

their international responsibilities. Another electronic database, the Pathogen Asset Control System, inventoried and controlled access to the pathogens stored in the new central reference laboratories and institutes. In the nations that had them, CTR policy and program managers and the national research institute directors worked with the U.S. Centers for Disease Control and Prevention and selected Department of Defense laboratories to organize and conduct training course and seminars with the national scientific and technical staffs on diagnostic and epidemiological topics. The classes and courses discussed bioethics, biosafety and biosecurity, and emphasized sustainment, program investment and strategic relevance to the region and world. In Georgia in 2005, the classes trained 450 scientists and lab technician on techniques in biosafety and biosecurity. Following these courses were new classes in diagnostic methods and epidemiology.<sup>155</sup>

Connections and communications with the world's scientific communities were not just topics in training courses. As part of the Biological Threat Reduction program, CTR managers established working groups of national scientists, and they developed new lines of communications between their research institutes and other national and international organizations working on similar biological issues. These organizations included scientific and other representatives from the Departments of State, Agriculture, and Health and Human Services, U.S. Agency for International Development, World Health Organization, World Bank, Japan International Cooperation Agency, Rostropovich-Vishnevskaya Foundation, Food and Agriculture Organization of the United Nations, Ministry of Defense of the United Kingdom, Canadian Global Partnership Program, and Ukraine's International Science and Technology Center.<sup>156</sup>

## With Courage and Persistence

In the cooperating nations, national health ministers and Defense Department CTR officials signed biological threat reduction implementing agreements. These basic documents provided the legal basis for acquiring, delivering, contracting, managing and conducting oversight for various programs and projects associated with biological weapons threat reduction. By 2007, there were CTR implementing agreements with Georgia, Azerbaijan, Uzbekistan, Ukraine and Kazakhstan, and one pending with Armenia. These new agreements authorized CTR program managers to develop national programs with each nation. With these programs came American managerial systems, project funding and periodic reviews. At an executive review with U.S.-Ukrainian officials, Shawn Cali, CTR program manager, went over the cooperative biological projects and programs and established a schedule of key events.<sup>157</sup> Similar U.S.-Georgia executive reviews were held in Tbilisi, Georgia in July 2007 and in Baku, Azerbaijan in June 2008.<sup>158</sup>

In Russia all CTR biological weapons programs were managed through a memorandum of agreement between

the U.S. government and the International Science and Technology Center, based in Moscow. This memo gave protection to U.S. government employees and contractors, exempted projects from VAT taxation, and provided audit and examination rights, but it was not well suited to managing and reviewing engineering and construction projects. For five years Jim Reid had requested a more formal bilateral implementing agreement with the Russian Ministry of Health, but none had been developed or signed. As a result, in 2008 Reid limited CTR engagements with the Russian institutes to the continuation of collaborative smallpox research and selected biosecurity and biosafety projects.<sup>159</sup>

The Biological Threat Reduction Program is the only CTR program that sponsored collaborative research programs with research scientists in Russia and the other nation's research institutes and laboratories. The objective was to use CTR funding to employ scientists and institutes in peaceful research that focused on investigating the properties of dangerous pathogens to develop prophylactic or preventive methodologies. The collaborative projects sought to prevent



Defense Threat Reduction Agency

Biological weapons training in Georgia

proliferation of BW scientific expertise and to preempt its departure for other nations. It tried to increase transparency at the biological institutes and encouraged standards of openness, ethics and professional conduct by scientists. It involved U.S. scientists and institutes to prepare them to recognize new biological threats.

By 2005, the U.S. CTR program had funded 12 research projects with biological research scientists working at five Russian institutes. There were also two projects in Kazakhstan, four in Uzbekistan and one in Georgia. In Russia, these research projects involved more than 400 scientists at different research institutes. In Kazakhstan scientists mapped the occurrence of anthrax throughout that vast nation. In another CTR funded project, scientists produced a modern molecular epidemiological study of brucellosis, a major health and economic problem with livestock in Kazakhstan and Uzbekistan. These important studies engaged 224 scientists and technicians working at 11 different research institutes.<sup>160</sup> The director of Kazakhstan's research institute declared that the program "provides us with important assistance in gaining access to international scientific information, participating in international conferences, publishing internationally and learning modern research methods."<sup>161</sup>

To increase oversight on these cooperative biological research projects in Russia, CTR program managers required that an American collaborating scientist work in the Russian research laboratories at times when research was being conducted. At DTRA, CTR officials renewed a contract with the University Strategic Partnership, led by the University of New Mexico and Pennsylvania State University, to recruit American biologists to work in Russia with national scientists. However, these experts, known as "visiting scientists," were not able to work in the Russian biological research institutes due to directors' unwillingness to cooperate and enter into bilateral implementing agreements on biological threat reduction. Instead, the visiting scientists developed CTR-funded research projects with scientists from other nations. By 2007, there were 10 collaborative research projects underway in Azerbaijan, Georgia, Kazakhstan and Ukraine. American scientists working on these projects came from Louisiana State University, New Mexico State University, Arizona State University, University of Maryland, Pennsylvania State University, University of Florida, Texas A&M University, Department of Agriculture, Centers for Disease Control and

Prevention, Walter Reed Army Institute of Research, Naval Medical Research Center, Army Medical Research Institute of Infectious Diseases, Armed Forces Research Institute of Medical Sciences, Armed Forces Institute of Pathology and the Naval Medical Research Unit-3. Each of these CTR-funded projects worked to develop international standards of openness, ethics and conduct among national biological scientists and technicians.<sup>162</sup>

So vigorous were these new biological threat reduction programs that by 2008 it had become, according to independent experts, "the largest biological nonproliferation program in the world."<sup>163</sup> Like the other CTR nuclear and chemical weapons reduction programs, the biological effort attracted other nations and the European Union into starting new projects in Russia and the other nations. As the CTR biological programs developed full-scale in Georgia, Kazakhstan, Uzbekistan, Ukraine and Azerbaijan, new cooperative efforts grew into robust public health programs, ones that could be sustained over many years. New collaborative research projects, involving American, international and national scientists began in Russia, Georgia, Ukraine and the other nations.

Within the Bush administration, these new Biological Threat Reduction Programs were endorsed, supported and managed by senior policy officials. Lisa Bronson, Deputy Undersecretary of Defense for Technological Security Policy and Counterproliferation, testified to Congress that dangerous pathogens and the scientists who developed them were a serious security threat. She asked Congress to support and fund the CTR program's Threat Analysis Detection and Response efforts in Central Asian nations and fund other projects that would consolidate and enhance the biosafety and biosecurity of the pathogens.<sup>164</sup> Congress, led by Senator Lugar, authorized the new programs and appropriated funds to pay for them.

## Summary: Bush-Putin Years

When terrorists attacked New York City and Washington, D.C. on September 11, 2001, it devastated the United States. President Bush and his administration altered the nation's national security strategy and foreign policy. Antiterrorism, counter terrorism and military invasions in Central Asia and the Middle East dominated the decade. Russia, under Putin, had a different set of objectives. In June 2002 Putin appealed

at the G-8 Summit leaders meeting in Canada, asking them to assist Russia in destroying its chemical arsenals and obsolete nuclear missiles and submarines. National leaders pledged \$10 billion over 10 years. The United States pledged another \$10 billion. Then in December, the Bush administration, following an extensive review, issued its national strategy to combat weapons of mass destruction. It directed the administration's departments and officials to dismantle the former Soviet Union nations' WMD and infrastructure and to consolidate and to secure their remaining weapons and related technologies. The new strategy sought to increase transparency and encourage new standards of conduct in all policies and programs. For the next six years, the Nunn-Lugar CTR and other international programs were governed by this strategy.

As the decade began, the Nunn-Lugar CTR program had major problems in Russia. A major project, the Krasnoyarsk liquid propellant disposal plant, had been planned, constructed and equipped by an American-funded CTR contractor, when it had to be cancelled. Russia failed to produce the rocket fuels. Another large project, the Votkinsk solid rocket motor dismantlement facility, was cancelled suddenly by the Russian government. At the same time, the American CTR program at Mayak, where it was constructing and equipping a large, modern Russian fissile materials storage facility, had run into a series of difficulties. Then, problems arose in Russia with construction of the chemical weapons destruction facility at Shchuch'ye. At the same time, the Russian Ministry of Defense had decommissioned hundreds of missiles and expected the American CTR program to assist in their eliminations. The Secretary of Defense directed investigations by the Inspector General; Congress held hearings, criticized the entire CTR effort, and directed the Government Accounting Agency to investigate.

There were several consequences. Within the Department of Defense, officials developed new CTR policies and implementation strategies. J.D. Crouch, Lisa Bronson, Jim Reid directed an extensive policy review that revalidated every program and every project. Reid, Pat Wakefield, and John Byrd developed new managerial and acquisition strategies for all programs in Russia. New semi-annual CTR Executive Review meetings in Moscow were instituted with senior Russian officials. In these reviews, American and Russian senior managers went over every program and project, examining all of the issues, problems, and schedules.

Briefings and minutes were recorded and exchanged. Senior Russian officials, General Valynkin, 12<sup>th</sup> Main Directorate, Zinovy Pak, Russian Munitions Administration, Lev D. Ryabev, Minister of Atomic Energy, and Nikolai Shumkov, Russian Air and Space Administration and their senior staffs attended these meetings.

The results were striking. Across Russia, the Ministry of Defense had directed decommissioning of dozens of missile regiments, the U.S. CTR program had contractors at the sites, lifting the missiles from the silos, defueling and transporting them to storage facilities. When ballistic missiles on military trains were decommissioned, they were removed, defueled, and transported to elimination facilities. Strategic ballistic missiles on nuclear submarines went through the same processes. U.S. and Russian officials developed plans, including an agreement to limit of CTR assistance, for completion of the Russian Chemical Weapons Disposal Facility at Shchuch'ye. In 2005, Bush and Putin agreed on the Bratislava Initiative to develop and implement security enhancements at Russian national nuclear storage facilities within three years. In addition, the U.S. CTR program developed new proliferation prevention initiative projects to counter terrorist organizations with Uzbekistan, Kazakhstan, Ukraine, and Azerbaijan.

Along with these assistance projects, the CTR program developed new programs in biological threat reduction. The objectives for this new effort differed considerably from the post-Cold War, Andrew Weber declared, now the issue was for the United States was to work cooperatively with other nations to stop the leakage of dangerous biological materials, pathogens, and expertise. Introducing modern security and surveillance systems with these nations would establish early warning systems against disease outbreaks and provide for the surveillance of infectious diseases.

It was a tumultuous decade for both the United States and the Russian Federation. The United States experiences were dominated by foreign wars in Afghanistan and Iraq, and the establishment of domestic antiterrorism laws and institutions. By contrast, Russia under Putin grew prosperous, benefiting from a global rise in gas and oil prices. Russia's foreign policy developed an assertive anti-American tone. Both developments would influence the direction of America's largest nonproliferation assistance program.

## Endnotes

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<sup>1</sup> See Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2004, p 6.

<sup>2</sup> *Ibid.*, p. 6.

<sup>3</sup> Letter, Deputy Secretary of Defense to Office of the Inspector General, "Review of the Cooperative Threat Reduction (CTR) Projects that Rely on Russian Federation (Russia) Assurances," 18 March 2002.

<sup>4</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2004, pp. 7, 30.

<sup>5</sup> Deputy Secretary of Defense Wolfowitz' letter cited in section "DOD Concerns with the Absence of a Transparency Agreement," in Report, CTR Policy Office, DoD, CTR Report to Congress, FY 2005, pp. 64-65.

<sup>6</sup> Report, DoD Office of the Inspector General, "Cooperative Threat Reduction: CTR Construction Projects," 18 December 2003, pp. 7-10.

<sup>7</sup> Report, CTR Policy Office, DoD Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2003, p II-4. On 4 March 2003, Paula A. DeSutter, Assistant Secretary of State for Verification and Compliance, testified to Congress that Russia was in noncompliance with the Biological Weapons Convention and the Chemical Weapons Convention. Based on DeSutter's recommendations, President Bush did not certify to Congress Russia's commitment to compliance. See Statement, "Cooperative Threat Reduction," by Paula A. DeSutter, Assistant Secretary of State for Verification and Compliance, to the House Armed Services Committee, 4 March 2009.

<sup>8</sup> See Report, DoD Office of the Inspector General, "Cooperative Threat Reduction: CTR Construction Projects," 18 December 2003, p.17.

<sup>9</sup> Interview, Colonel Mark Foster, U.S. Air Force, Deputy Director, CTR Directorate, Defense Threat Reduction Agency, with Joseph P. Harahan, Historian, DTRA, Fort Belvoir, Virginia, 16 May 2005.

<sup>10</sup> Testimony, Lisa Bronson, Deputy Secretary of Defense for Technology Security Policy and Counterproliferation, to the U.S. Senate Committee on Armed Services, Subcommittee on Emerging Threats and Capabilities, 19 March 2004.

<sup>11</sup> U.S. House of Representatives, Armed Services Committee, Opening Remarks of Chairman Duncan Hunter, Hearing on U.S. Cooperative Threat Reduction and Non-Proliferation Programs, 4 March 2003. That same day, Rep. Hunter published an opinion essay in the *Washington Post*, "Wasteful 'Threat Reduction' in Russia," 4 March 2003.

<sup>12</sup> U.S. House of Representatives, Armed Services Committee, Statement of Dr. J.D. Couch II, Assistant Secretary of Defense for International Security Policy, Hearing on U.S. Cooperative Threat Reduction and Non-Proliferation Programs, 4 March 2003.

<sup>13</sup> See Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2003, pp. II 3-4; and Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2004.

<sup>14</sup> For the Statement see, "The G-8 Partnership Against the Spread of Weapons and Materials of Mass Destruction," at [http://www.g8.fr/evian/english/navigation/g8\\_documents/archives\\_from\\_previous\\_summits/kananaskis\\_summit\\_-\\_2002/the\\_g8\\_global\\_partnership\\_against\\_the\\_spread\\_of\\_weapons\\_and\\_materials\\_of\\_mass\\_destruction.html](http://www.g8.fr/evian/english/navigation/g8_documents/archives_from_previous_summits/kananaskis_summit_-_2002/the_g8_global_partnership_against_the_spread_of_weapons_and_materials_of_mass_destruction.html) accessed on 22 December 2011.

<sup>15</sup> *Ibid.* See also Press Release, U.S. State Department, "G-8 Committing up to \$20 billion to destroy Weapons of Mass Destruction," 27 June 2007. See also, Alexander Pikayev, "Breaking the U.S.-Russian Global Partnership Deadlock? *The Monitor*, (Summer 2004) Center for International Trade and Security, University of Georgia, pp. 8-11.

<sup>16</sup> There was debate as to the Bush Administration's commitment to the CTR program. Within the Department of Defense no senior political appointee traveled to Russia to review CTR programs or to participate in senior level meetings with Russian ministerial directors as had been the case in the Clinton Administration. When asked about the CTR program in a Congressional hearing, Secretary of Defense Rumsfeld denied any knowledge of it. On the other hand, Deputy Secretary of Defense Wolfowitz signed letters to the Russian ministries regarding the CTR program. After the 11 September 2001 attacks, the Bush administration was consumed with organizing and leading its global war against terrorism. Senator Lugar was critical of the Bush Administration and its international relations with Russia.

<sup>17</sup> These figures were as of 2004. See Pikayev, "Breaking the U.S.-Russian Global Partnership Deadlock?" *The Monitor*, (Summer 2004) Center for International Trade and Security, University of Georgia, p 8. For the G-8 nations, similar figures were recorded by the British in the Ministry of Defense Report, The G-8 Global Partnership – 2003 Annual Report (London, 2003).

<sup>18</sup> U.S. Senator Richard G. Lugar, U.S. Senate Foreign Relation Committee, "Statement on the 10+10 over 10 G-8 Program," October 10, 2002. Senator Lugar commented on the recent CTR problems in implementing programs with the Russian bureaucracies, "But as we have learned in other fora, President Putin's biggest obstacle could well be his own government bureaucracy."

<sup>19</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2004 (Information date: January 2003), pp. 10-17, 25-32, 34-39.

<sup>20</sup> For the long-range CTR program projections see the same report and CTR Policy Office Briefing, House Armed Services Committee, 1 April 2003.

<sup>21</sup> *Ibid.*

<sup>22</sup> *Ibid.*, pp.10-14, 25-30,34-39. For CTR program projections see the CTR Policy Office's Briefing, to the House Armed Services Committee, 1 April 2003.

<sup>23</sup> *Ibid.*, pp. 9, 46.

<sup>24</sup> *Ibid.*, pp. 45-46.

<sup>25</sup> *Ibid.*, p 45.

<sup>26</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2004, pp. 47-48.

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<sup>27</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2004, pp. 45-46, 43-44.

<sup>28</sup> National Security Presidential Directive-17, "National Strategy to Combat Weapons of Mass Destruction," December 2002.

<sup>29</sup> See Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2004, pp. 1-3.

<sup>30</sup> Testimony, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, U.S. Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, 10 March 2004.

<sup>31</sup> Ibid.

<sup>32</sup> Bianka J. Adams and Joseph P. Harahan, *Responding to War, Terrorism, and WMD Proliferation: History of DTRA 1998-2008*, (DTRA History Series, Washington, D.C., 2008), pp. 96-98.

<sup>33</sup> Testimony, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, U.S. Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, 10 March 2004. See also, Report, National Research Council, National Academies, "The Biological Threat Reduction Program of the Department of Defense: From Foreign Assistance to Sustainable Partnerships," National Academies Press, 2008.

<sup>34</sup> Interview, Andrew Weber, Assistant Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, OSD, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 October 2009.

<sup>35</sup> Briefing, Dr. Michael A. Balady, Program Manager, Biological Weapons Proliferation Prevention Program, "Overview of the CTR Biological Weapons Proliferation Prevention Program," no date, (2005).

<sup>36</sup> Testimony, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, U.S. Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, 10 March 2004.

<sup>37</sup> Ibid.

<sup>38</sup> Ibid. See also, DTRA, CTR Program Review, 7 November 2003, with the specific briefing by Mark West, "WMD Proliferation Prevention Initiative (WMD-PPI)".

<sup>39</sup> President Bush, "Remarks on Weapons of Mass Destruction Proliferation," The White House, 11 February 2004, at <http://georgewbush-whitehouse.archives.gov/news/releases/2004/02/20040211-4.html> accessed on 22 December 2011.

<sup>40</sup> Testimony, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, U.S. Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, 10 March 2004.

<sup>41</sup> Report, DoD Office of the Inspector General, "Cooperative Threat Reduction: CTR Construction Projects," 18 December 2003.

<sup>42</sup> Interview, Colonel Mark Foster, U.S. Air Force, Deputy Director, CTR Directorate, Defense Threat Reduction Agency, with Joseph P. Harahan, Historian, DTRA, Fort Belvoir, Virginia, 16 May 2005. See also, Report, CTR Policy Office, DoD, Cooperative Threat

Reduction Annual Report to Congress Fiscal Year 2006 and Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2008.

<sup>43</sup> Interview, Colonel Mark Foster, U.S. Air Force, Deputy Director, CTR Directorate, Defense Threat Reduction Agency, Fort Belvoir, Virginia, 16 May 2005; and Interview, Patrick Wakefield, Deputy Assistant Secretary of Defense for Chemical Demilitarization and Threat Reduction, Office of the Secretary of Defense, 21 June 2005; Interview, Thomas Kuenning, Director, CTR Directorate, DTRA, 6 August 2003. All interviews were with the author.

<sup>44</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006, pp. 6-7.

<sup>45</sup> Ibid., p. 7.

<sup>46</sup> Interview, Colonel Mark Foster, USAF, Deputy Director, CTR Directorate, Defense Threat Reduction Agency, with Joseph P. Harahan, Historian, DTRA, Fort Belvoir, Virginia, May 16, 2005; Biography, John T. Byrd, director, CTR Directorate, DTRA, 9 December 2004. Byrd was a retired U.S. Navy Rear Admiral.

<sup>47</sup> Interview, Patrick Wakefield, Deputy Assistant Secretary of Defense for Chemical Demilitarization and Threat Reduction, Office of the Secretary of Defense, with Joseph P. Harahan, Historian, DTRA, 21 June 2005, and Interview, Colonel Mark Foster, U.S. Air Force, Deputy Director, CTR Directorate, Defense Threat Reduction Agency, Fort Belvoir, Virginia, 16 May 2005.

<sup>48</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006, (Information cutoff, December 2004) pp. 10-11, and Interview, Colonel Mark Foster, U.S. Air Force, Deputy Director, CTR Directorate, Defense Threat Reduction Agency, Fort Belvoir, Virginia, 16 May 2005.

<sup>49</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006, pp. 10-11.

<sup>50</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006, p 11; and Interview, Patrick Wakefield, Deputy Assistant Secretary of Defense for Chemical Demilitarization and Threat Reduction, OSD, with Joseph P. Harahan, Historian, DTRA, 21 June 2005; Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2008, p.7.

<sup>51</sup> Interview, Patrick Wakefield, Deputy Assistant Secretary of Defense for Chemical Demilitarization and Threat Reduction, OSD, 21 June 2005; see also, Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006, p 10.

<sup>52</sup> Interview, Patrick Wakefield, Deputy Assistant Secretary of Defense for Chemical Demilitarization and Threat Reduction, OSD, with Joseph P. Harahan, Historian, DTRA, 21 June 2005.

<sup>53</sup> Valynkin's quotation is from the CTR Policy Office, "Minutes, Integrated Program Management Review/Executive Review, with Ministry of Defense", 14 June 2005. Approximately 20 people participated in these meetings.

<sup>54</sup> Briefing, Hunter Lutinski, Program Manager, DTRA, "Nuclear Weapons Safety and Security, Implementation Program Management Review," 14 June 2005.

<sup>55</sup> See, CTR Policy Office, DoD, "Minutes, Integrated Program Management Review/Executive Review, with Ministry of Defense," 14 June 2005.

<sup>56</sup> Briefing, Lt. Colonel Zane Mitchell, Deputy Program Manager, DTRA, "Chemical Weapons Destruction Facility, Executive Review and Implementation Program Management Review", 16 June 2005.

<sup>57</sup> Ibid., see Byrd's talking points in the CTR Policy Office, Minutes, Integrated Program Management Review/Executive Review, with the Federal Agency of Industry, Russian Federation, 16 June 2005.

<sup>58</sup> CTR Policy Office, Minutes, Integrated Program Management Review/Executive Review, with the Federal Agency of Industry, Russian Federation, 16 June 2005.

<sup>59</sup> Interview, Colonel Richard Green, Chief DTRA-Moscow Office, U.S. Embassy, Moscow, with Joseph P. Harahan, Historian, DTRA, 21 July 2005. Brackets added by author.

<sup>60</sup> Ibid.

<sup>61</sup> Interview, Patrick Wakefield, Deputy Assistant Secretary of Defense for Chemical Demilitarization and Threat Reduction, Office of the Secretary of Defense, with Joseph P. Harahan, Historian, DTRA, 21 June 2005. Brackets added by author.

<sup>62</sup> Interview, Commander Donald Holcomb, U.S. Navy, Program Manager SSBN Elimination, Russia, CTR Directorate, DTRA, with Joseph P. Harahan, Historian, DTRA, 7 December 2004.

<sup>63</sup> For Byrd's statement see, CTR Policy Office, "Minutes, Integrated Program Management Review/Executive Review, with Ministry of Defense," 14 June 2005.

<sup>64</sup> Biography, John T. Byrd, DTRA, 19 December 2006.

<sup>65</sup> Joint Statement by President George W. Bush and President Vladimir V. Putin on Nuclear Cooperation, Bratislava, 24 February 2005. at [http://moscow.usembassy.gov/transcripts\\_photo\\_bio/joint-statement-by-president-george-w.-bush-and-president-vladimir-v.-putin-on-nuclear-security-cooperation-bratislava-february-24-2005](http://moscow.usembassy.gov/transcripts_photo_bio/joint-statement-by-president-george-w.-bush-and-president-vladimir-v.-putin-on-nuclear-security-cooperation-bratislava-february-24-2005) accessed on 22 December 2011.

<sup>66</sup> Peter Baker and Walter Pincus, "U.S.-Russia Pact Aimed at Nuclear Terrorism," *Washington Post*, 24 February 2005.

<sup>67</sup> Joint Statement by President George W. Bush and President Vladimir V. Putin on Nuclear Cooperation, Bratislava, 24 February 2005.

<sup>68</sup> See Matthew Bunn, "Securing Warheads and Materials: Nuclear Warhead Security Upgrades;" see also, Morten Bremer Maerli, "U.S.-Russian Nava Security Upgrades: Lessons Learned and Future Steps," *Yaderny Kontrol Digest* 7, no. 4, Fall 2002.

<sup>69</sup> Interview, Hunter Lutinski, Program Manager, Nuclear Weapons Safety and Security Program, DTRA, with Joseph P. Harahan, Historian, DTRA, 20 May 2009.

<sup>70</sup> Ibid. Letter, James H. Reid, Director CTR Policy Office, OSD, and David Huizenga, Assistant Deputy Administrator, International Material Protection and Cooperation, DOE, to General Colonel

I.N. Valynkin. Chief, 12<sup>th</sup> Main Directorate, Ministry of Defense, Russian Federation, 13 October 2005.

<sup>71</sup> Interview, Hunter Lutinski, Program Manager, Nuclear Weapons Safety and Security Program, DTRA, with Joseph P. Harahan, Historian, DTRA, 20 May 2009.

<sup>72</sup> Ibid. See also, CTR Policy Office, DoD, "Minutes, U.S.-Russian Integrated Program Management Review/Executive Review, DoD-MOD," 14 June 2005 and 16 November 2005.

<sup>73</sup> CTR Policy Office, DoD, "Minutes, U.S.-Russian Integrated Program Management Review/Executive Review, DoD-MOD," 14 June 2005 and 16 November 2005.

<sup>74</sup> Letter, James H. Reid, Director CTR Policy Office, OSD, and David Huizenga, Assistant Deputy Administrator, International Material Protection and Cooperation, DOE, to General Colonel I.N. Valynkin. Chief, 12<sup>th</sup> Main Directorate, Ministry of Defense, Russian Federation, 13 October 2005.

<sup>75</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, dated 17 June 1992, as amended 3 February 2005, and as amended and extended 15/16 June 1999 and 16 June 2006 (U.S.-Russia CTR Umbrella Agreements). See also, Press Release, The White House, "Cooperative Threat Reduction Agreement with Russia Extended," 19 June 2006.

<sup>76</sup> CTR Policy Office, DoD, "Minutes, U.S.-Russian Integrated Program Management Review/Executive Review, DoD-MOD," 16 November 2005. The U.S. team prepared issue reports, in English and Russian, for presentation at the meetings. See, Lutinski, Nuclear Weapons Safety and Security Paper: Site Security Enhancements, 9 November 2005. See also, Interview, Hunter Lutinski, Program Manager, Nuclear Weapons Safety and Security Program, DTRA, with Joseph P. Harahan, Historian, DTRA, 20 May 2009.

<sup>77</sup> CTR Policy Office, DoD, "Minutes, U.S.-Russian Integrated Program Management Review/Executive Review, DoD-MOD," Moscow, Russia, 7 June 2007. See U.S. issue paper, "Nuclear Weapons Safety and Security: Automated Inventory Control and Management System (AICMS)."

<sup>78</sup> Ibid. See the issue paper "Nuclear Weapons Safety and Security: Automated Inventory Control and Management System (AICMS)."

<sup>79</sup> CTR Policy Office, DoD, "Minutes, U.S.-Russian Integrated Program Management Review/Executive Review, DoD-MOD," Moscow, Russia, 7 June 2007. See issue paper, "Completed Projects and Accomplishments."

<sup>80</sup> CTR Policy Office, DoD, "Minutes, U.S.-Russian Integrated Program Management Review/Executive Review, DoD-MOD," Moscow, Russia, 7 June 2007. See issue paper, "Site Security Enhancements."

<sup>81</sup> Interview, Hunter Lutinski, Program Manager, Nuclear Weapons Safety and Security Program, DTRA, with Joseph P. Harahan, Historian, DTRA, 20 May 2009.

<sup>82</sup> Ibid. See also, CTR Policy Office, DoD, "Minutes, U.S.-Russian Integrated Program Management Review/Executive Review,

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<sup>83</sup> Interview, Hunter Lutinski, Program Manager, Nuclear Weapons Safety and Security Program, DTRA, with Joseph P. Harahan, Historian, DTRA, 20 May 2009. See also, CTR Policy Office, DoD, "Minutes, U.S.-Russian Integrated Program Management Review/Executive Review, DoD-MOD," Moscow, Russia, 10 November 2007. See issue paper, "Site Security Enhancements."

<sup>84</sup> Interview, Lutinski, Program Manager, Nuclear Weapons Safety and Security Program, DTRA, with Harahan, Historian, DTRA, 20 May 2009.

<sup>85</sup> CTR Policy Office, DoD, "Minutes, U.S.-Russian Integrated Program Management Review/Executive Review, DoD-MOD," Moscow, Russia, 4 June 2008 and see issue paper, "Site Security Enhancements."

<sup>86</sup> Interview, Lutinski, Program Manager, Nuclear Weapons Safety and Security Program, DTRA, with Harahan, Historian, DTRA, 20 May 2009.

<sup>87</sup> White House, Fact Sheet: "Defending Against Weapons of Mass Destruction Terrorism," 3 December 2008. See also, Press Release, White House Press Secretary Dana Perino, 23 December 2008.

<sup>88</sup> U.S. Department of Energy, Press Release, "U.S. and Russia Complete Nuclear Security Upgrades from Bratislava," 23 December 2008.

<sup>89</sup> Ibid.

<sup>90</sup> "Russia, U.S. to continue cooperating on nuclear security," *Russia & CIS Military Newswire*, Moscow, 26 December 2008.

<sup>91</sup> DTRA News Release, "Bratislava Nuclear Security Initiative Completed by the End of 2008," 23 December 2008.

<sup>92</sup> Ibid.

<sup>93</sup> Interview, Nikolai Ivanovich Shumkov, Director (Retired) Department of Missile Technologies, Federal Space Agency, Russian Federation, with Joseph P. Harahan, Historian, DTRA, 20 July 2005, Moscow, Russia.

<sup>94</sup> Briefing, Mark West, SOAE Program Manager, DTRA, "Strategic offensive Arms Elimination," February 2005; For specific activities in Russia, see Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2005 (January 2004) pp. 23-30.

<sup>95</sup> Report, CTR Policy Office, "Second Semi-annual Executive Review of Cooperative Threat Reduction (CTR) Programs, 15-17 January 2003".

<sup>96</sup> See, "Agreement Between the Department of Defense of the United States of America and the Federal Space Agency of the Russian Federation Concerning Cooperation in the Elimination of Strategic Offensive Arms, dated August 26, 1993, as amended April 3, 1995, June 19, 1995, May 27, 1996, April 11, 1997, February 11, 1998, June 9, 1998, August 16, 1999, August 8, 2000, June 9, 2003, September 25, 2003, and January 14, 2005, and as amended and extended August 30, 2002." (SOAE Implementing Agreement)

<sup>97</sup> See, Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2007 (December 2005), pp. 12-17.

<sup>98</sup> Nunn-Lugar Report, August 2005, Office of Richard G. Lugar, U.S. Senate.

<sup>99</sup> Jeff Zeleny, U.S. Focuses on Russian WMD," *Chicago Tribune*, 27 August 2005.

<sup>100</sup> Ibid. For an account of this same trip see, "Lugar and Obama Urge Weapons Destruction of Conventional Weapons," *Global News Wire*, 30 August 2005; Richard G. Lugar, "Aging Soviet Subs are Still a Threat; A Cold War Legacy," *International Herald Tribune*, 13 August 2005.

<sup>101</sup> See, Nunn-Lugar Report, August 2005 Office of Richard G. Lugar, U.S. Senate.

<sup>102</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2007 (December 2005), pp. 16-17.

<sup>103</sup> Ibid., p16; See Reports, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2008 (December 2006), pp. 3, 12-13; Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2009 (December 2007), pp. 10-11; Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2010 (December 2008), pp. 2 and 9. These projects were discussed at the U.S.-Russian Executive Reviews of the CTR Program.

<sup>104</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2009 (December 2007), p. 10.

<sup>105</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2010 (December 2008), p. 9.

<sup>106</sup> Ibid., p. 9.

<sup>107</sup> Testimony, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, U.S. Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, 10 March 2004.

<sup>108</sup> James H. Reid, Director, CTR Policy Office, Office of the Secretary of Defense, "Memorandum for Director, Treaties and Threat Reduction, OSD/Acquisition, Technology and Logistics," 22 March 2007.

<sup>109</sup> Ibid.

<sup>110</sup> Briefing, Lt. Commander Robert Bridges, CTR Project Officer, DTRA, "SS-24 Solid Rocket Motor Storage and Propellant Disposition Support in Ukraine," 27 October 2009.

<sup>111</sup> Reports, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2007 (December 2005), pp. 17-18; Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2008 (December 2006), pp. 14-15; Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2009 (December 2007), p. 11; See also, Briefing, Lt. Colonel Zane Mitchell, DTRA, "Joint Requirements Implementation Plan (JRIP)," June 2006, Moscow, Russia.

<sup>112</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2005 (January 2004), pp. 33-34.

<sup>113</sup> "Russian Chemical Weapons Dismantlement: Progress with Problems," *WMD Insights*, DTRA, June 2007.

<sup>114</sup> V.I. Kholstov, Director -General Russian Munitions Agency, "Destruction of chemical weapons is a vital necessity and an issue of mutual concern," *Bulletin of Chemical Disarmament*, No. 1, January 2004. See also, Issue Brief, Nuclear Threat Initiative, "Global CW Assistance," June 2005. Also, "Russian Chemical Weapons Dismantlement: Progress with Problems," *WMD Insights*, DTRA, June 2007.

<sup>115</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2005 (January 2004), pp. 33-34.

<sup>116</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006 (December 2004), pp. 25-26.

<sup>117</sup> See CTR Policy Office, "Minutes, U.S. – Russia, Integrated Program Management Review/Executive Review, with Rosprom," 16 June 2005.

<sup>118</sup> Briefing, Paul L. McNelly, CW Program Manager, DTRA, "Chemical Weapons Destruction Facility," 17 November 2007, Moscow, Russia. In this briefing, McNelly presented a detailed timeline of the major decisions leading up to and after the decision to halt contractor negotiations.

<sup>119</sup> Agreement Between the Department of Defense of the United States of America and the Federal Agency for Industry Concerning the Safe, Secure and Ecologically Sound Destruction of Chemical Weapons, dated July 30, 1992, as amended 18 March 1994, 28 May 1996, 10 April 1997, 29 December 1997, 14 January 1999, 14 November 2000, 29 August 2002, 23 October 2002, 17 March 2003, 18 March 2003, 23 September 2003, 28 July 2004, 6 October 2005, 8 September 2006, and 21 May 2007 (Chemical Weapons Destruction Implementing Agreement).

<sup>120</sup> Briefing, Paul L. McNelly, CW Program Manager, DTRA, "Chemical Weapons Destruction Facility," 17 November 2007, Moscow, Russia. See also, "Russian Chemical Weapons Dismantlement: Progress with Problems," *WMD Insights*, DTRA June 2007 and Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2009 (December 2007), p. 11.

<sup>121</sup> Briefing, Paul L. McNelly, CW Program Manager, DTRA, "Chemical Weapons Destruction Facility," to the IMPR/Executive Review Meeting, Moscow, Russia, 17 November 2007. See also, Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2010 (December 2008), p. 10.

<sup>122</sup> Press Release, "Senators Lugar and Nunn Tour Shchuch'ye Chemical Weapons Destruction Facility," 30 August 2007, Chelyabinsk, Russia.

<sup>123</sup> Philip P. Pan, "Plant to Destroy Chemical Weapons Opens in Russia," *Washington Post*, 30 May 2009. "Russia opens chemical weapons destruction facility in Siberia," *RIA Novosti*, Moscow, 29 May 2009.

<sup>124</sup> "Shchuch'ye, Russia chemical weapons destruction plant opens," *Secret Scotland*, at <http://webcache.googleusercontent.com/search?q=cache:MiZwaixSL3gJ:secretscotland.wordpress.com/2009/05/31/shchuchye-russia-chemical-weapons-destruction-plant-opens/+&cd=1&hl=en&ct=clnk&gl=us> accessed on 22 December 2011.

<sup>125</sup> "Russia opens chemical weapons destruction facility in Siberia," *RIA Novosti*, Moscow, 29 May 2009; Philip P. Pan, "Plant to Destroy Chemical Weapons Opens in Russia," *Washington Post*, May 30, 2009. See also "Russian Chemical Weapons Destruction Site Completed Despite Obstacles," 27 May 2009, Nuclear Threat Initiative at <http://webcache.googleusercontent.com/search?q=cache:TisbW2R4jz4J:www.nti.org/gsn/article/russian-chemical-weapons-destruction-site-completed-despite-obstacles/+&cd=1&hl=en&ct=clnk&gl=us> accessed on 22 December 2011; and "CW Destruction Site begins Operation," *Arms Control Today*, April 2009.

<sup>126</sup> "Russia opens chemical weapons destruction facility in Siberia," *RIA Novosti*, 29 May 2009.

<sup>127</sup> Press Release, "Lugar Comments at Shchuch'ye Chemical Weapons Destruction Facility Opening," 28 May 2009, Shchuch'ye, Russia.

<sup>128</sup> Hans-Joachim Spanger, *Between Ground Zero and Square One*, (Peace Research Institute Frankfurt, 2008).

<sup>129</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2004, p. 33.

<sup>130</sup> Interview, Patrick Wakefield, Deputy Assistant Secretary of Defense for Chemical Demilitarization and Threat Reduction, Office of the Secretary of Defense, with Joseph P. Harahan, Historian, DTRA, 21 June 2005.

<sup>131</sup> Testimony, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, U.S. Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, 10 March 2004.

<sup>132</sup> Briefing, Bill Younger, Program Manager, WMD Proliferation Prevention Initiatives, "Weapons of Mass Destruction Proliferation Prevention Initiatives," CT Directorate, DTRA, February 2004.

<sup>133</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2008 (December 2006), p. 33.

<sup>134</sup> CTR Policy Office, DoD, Minutes, "Executive Review WMD PPI Azerbaijan," 16 July 2007.

<sup>135</sup> See, Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2009 (December 2007), p. 21-23. Briefing, Lt. Commander Fred Sheehy, CTR Project Officer, "Weapons of Mass Destruction- Proliferation Prevention Initiative, Caspian Sea Maritime – Azerbaijan: Project Status," 25 June 2008, Baku, Azerbaijan.

<sup>136</sup> See, Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2010 (December 2008), p. 17-18.

<sup>137</sup> Country Profile: Uzbekistan, BBC News, 2008.

<sup>138</sup> Reports, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006 (December

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2004), pp. 25-26; Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2005 (January 2004), pp. 33-34.

<sup>139</sup> Reports, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2008 (December 2006), pp. 80-81; Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2009 (December 2007), pp. 21-23; Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2010 (December 2008), pp. 17-18.

<sup>140</sup> An account of this program runs throughout the Defense Department's CTR Annual Reports to Congress for 2005, 2006, 2007, and 2008.

<sup>141</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2010 (December 2008), pp. 18-19.

<sup>142</sup> Interview, Andrew Weber, Assistant Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, OSD, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 October 2009.

<sup>143</sup> Ibid.

<sup>144</sup> "The Biological Threat Reduction Program of the Department of Defense: From Foreign Assistance to Sustainable Partnerships," Report, Committee on Prevention of Proliferation of Biological Weapons, National Research Council, November 2008.

<sup>145</sup> Briefing, Dr. Michael Balady, Program Manager, BW Proliferation Prevention Program, CT Directorate, DTRA, "Overview of the Cooperative Threat Reduction Biological Weapons Proliferation Program," no date (2005).

<sup>146</sup> "The Biological Threat Reduction Program of the Department of Defense: From Foreign Assistance to Sustainable Partnerships," pp. 15-24.

<sup>147</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2005 (Data, January 2004), pp. 79-80. See also, CT Directorate, DTRA, "TADR Brochure," no date.

<sup>148</sup> Interview, Andrew Weber, Assistant Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, OSD, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 October 2009.

<sup>149</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2007, see Sections, Objective 2, and Objective 3.

<sup>150</sup> Interview, Andrew Weber, Assistant Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, OSD, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 October 2009.

<sup>151</sup> Interview, Andrew Weber, Assistant Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, OSD, with Joseph P. Harahan, Historian, DTRA, Washington, D.C., 14 October 2009.

<sup>152</sup> Testimony, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, U.S. Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, 10 March 2004. See also, Briefing, Dr. Michael A. Balady, Program Manager, Biological Weapons

Proliferation Prevention Program, "Overview of the CTR Biological Weapons Proliferation Prevention Program," no date (2005).

<sup>153</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2006, pp. 56-57. See also "The Biological Threat Reduction Program of the Department of Defense: From Foreign Assistance to Sustainable Partnerships," pp. 59-67.

<sup>154</sup> Ibid., pp. 48-49.

<sup>155</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2008 (Dec. 31, 2006), pp. 21-23.

<sup>156</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2007 (Dec. 31, 2008), pp. 14-17. See also "Countering Biological Threats, Challenges for the Department of Defense's Nonproliferation Program Beyond the Former Soviet Union," Report, Committee on the Prevention of Proliferation of Biological Weapons, National Research Council, National Academies Press, 2009.

<sup>157</sup> CTR Briefing Book, DTRA, "U.S.-Ukraine Executive Review, BTRP," 10 October 2006, Kiev, Ukraine.

<sup>158</sup> See CTR Briefing Book, DTRA, "U.S.-Georgia, Executive Review and Implementation Program Management Review of the Biological Threat Reduction Program in Georgia," 17 July 2007; see also, CTR Briefing Book, DTRA, "U.S.-Azerbaijan, U.S.-Georgia, Executive Review and Implementation Program Management Review of the Biological Threat Reduction Program," 25 June 2008, Baku, Azerbaijan.

<sup>159</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2010 (Dec. 31, 2008), p. 14.

<sup>160</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2007, Section: Objective 3. The engagement through training was complemented in both of the National Research Council reports.

<sup>161</sup> "The Biological Threat Reduction Program of the Department of Defense, From Foreign Assistance to Sustainable Partnerships," p. 31.

<sup>162</sup> Report, CTR Policy Office, DoD, Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2009 (Dec. 31, 2007), pp. 16-20. See also "Countering Biological Threats, Challenges for the Department of Defense's Nonproliferation Program Beyond the Former Soviet Union," pp. 9-10.

<sup>163</sup> "Countering Biological Threats, Challenges for the Department of Defense's Nonproliferation Program Beyond the Former Soviet Union," p. 4.

<sup>164</sup> Testimony, Lisa Bronson, Deputy Under Secretary of Defense for Technological Security Policy and Counterproliferation, U.S. Senate Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, 10 March 2004.

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## **The Obama Years: Program Continuity, New START Treaty and Global Expansion of Cooperative Biological Engagement**

Following President Barack Obama's election, inauguration, and cabinet selection, he began to outline in a series of public speeches his national security and foreign policy objectives. Traveling across Europe, he met with national leaders, military commanders, students and the public. In early April 2009, the president addressed a large crowd in Prague's central square explaining his position on nuclear weapons. "The existence of thousands of nuclear weapons," he declared, "is the most dangerous legacy of the Cold War... today, the Cold War has disappeared but thousands of those weapons have not."<sup>1</sup> The threat of a global nuclear war had diminished; however, he asserted that the risk of a nuclear attack from terrorist organizations had increased. In contemporary life, terrorists were determined "to buy, build, or steal one [a nuclear weapon]."<sup>2</sup> The United States, the president declared, would center its foreign policy on strengthening international non-proliferation regimes, negotiating and ratifying a new Strategic Arms Reduction Treaty with Russia, and ratifying the Comprehensive Test Ban Treaty.<sup>3</sup>

Next he focused on specific policies designed to deter terrorists, announcing a new American-led international effort to secure vulnerable nuclear materials around the world within four years. He endorsed the Bush administration's initiatives to break up black markets, detect and intercept dangerous materials in transit, and use financial tools to disrupt and destroy suspicious trades. President Obama signaled out the Proliferation Security Initiative and the Global Initiative to Combat Nuclear Terrorism, and indicated that they should become international institutions. Perhaps the president's

clearest statement during the Prague speech concerned the future of nuclear weapons: "I state clearly and with conviction America's commitment to seek the peace and security of a world without nuclear weapons."<sup>4</sup> In this speech and others, Obama defined the contemporary threat as terrorists seeking nuclear weapons and he declared that the United States and other nations would control and reduce these weapons through treaties, prohibitions, and cooperative programs.<sup>5</sup>

Among a number of international cooperative programs, Nunn-Lugar stood out for its long experience with Russia and the other regional nations. The program had been in existence for 16 years, it had assisted Ukraine, Kazakhstan, and to a degree, Belarus, in completely eliminating their inherited nuclear weapons and systems. It had sealed hundreds of nuclear testing tunnels in Kazakhstan. In Russia, it had assisted in the elimination of long range bombers, submarine launch ballistic missiles, nuclear submarines, and intercontinental ballistic missiles. When the number of weapon systems being eliminated escalated across Russia, the Nunn-Lugar CTR program helped secure the nation's nuclear weapons storage areas and facilities. It paid for special military trains transporting nuclear materials across Russia, and it assisted in the design, construction, and equipping of a large, modern, secure national fissile materials storage facility. Nunn-Lugar had been active in destroying abandoned chemical weapons production plants, and it had assisted for years in the design, construction, and equipping of one of Russia's largest chemical weapons disposal facilities. In recent years, Nunn-Lugar assistance had developed new programs in biological cooperation with Russia, and other nations in the region.

All of these Nunn-Lugar programs began with negotiations on bilateral cooperative agreements between nations and ministries, and then developed into implementing agreements on specific programs between departments, ministries, agencies, and organizations. As the projects worked out and serious issues arose, American and Russian program leaders developed a series of semi-annual managerial reviews which examined every aspect of the actual work. In the United States, all programs of the Nunn-Lugar assistance were examined annually by the administration and congressional committees. Senator Lugar was a senior senator in Congress; he knew every aspect of the complex program; he traveled to the sites year after year, talked with people working the projects, in Russia, Kazakhstan, Ukraine and other nations. Senator Obama, newly elected from Illinois, traveled with Senator Lugar on a trip to Ukraine and Russia. Lugar and Senator Nunn had long believed that the Cold War was over, but that nations needed assistance, expertise, and equipment in eliminating and securing their excess weapons. Throughout the program, special investigations were conducted by the Congressional Accounting Office and the Department of



Defense Threat Reduction Agency

Cooperative Threat Reduction program logo

Defense Inspector General. Consequently when President Obama articulated these foreign policy objectives, Nunn-Lugar was a well-established international assistance program, working directly on eliminating and securing excess weapons from the Cold War.

## New People and Nunn-Lugar

Of the many new people entering key positions in the Obama administration, a few had direct experience with the Nunn-Lugar program. Laura Holgate became the Senior Director for Weapons of Mass Destruction and Threat Reduction at the National Security Council.<sup>6</sup> In the 1990s she had served in the Defense Department as the Special Coordinator for Cooperative Threat Reduction. She had signed many of the Nunn-Lugar implementing agreements with senior Russian government officials. Holgate knew Nunn-Lugar's objectives, its programs and projects, and its potential. Ashton Carter became the Under Secretary of Defense for Acquisition, Technology and Logistics in the Department of Defense.<sup>7</sup> He had a long association with the Nunn-Lugar program. Carter had briefed the first meeting of U.S. senators convened by Senators Nunn and Lugar to discuss American assistance, before the collapse of the Soviet Union. A theoretical nuclear physicist and international relations specialist, he led the International and Global Affairs faculty at Harvard University. In the 1990s, Carter was Assistant Secretary of Defense for

U.S. Embassy, Prague, Czech Republic



President Obama speaking in Prague, April 2009



Ashton B. Carter

International Security Policy, a job that involved working with Russian, Ukrainian, Kazakh, and other national governments developing cooperative projects under Nunn-Lugar assistance programs. In 2008, Carter co-chaired with Robert Joseph, former Undersecretary of State for International Security Policy in the Bush administration, a special review panel that examined the roles and missions of the Defense Threat Reduction Agency (DTRA).<sup>8</sup> It reviewed many of the Nunn-Lugar programs being implemented by that agency, and recommended new initiatives.

Andrew Weber became the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs.<sup>9</sup> He worked for Carter. A specialist in threat reduction, Weber was instrumental in removing weapons grade uranium from Kazakhstan and Georgia and MIG-29 fighter aircraft from Moldova. He developed and had managerial oversight for the department's Biological Threat Reduction Program. He had worked on policy issues and program developments for more than 10 years within the department's Nunn-Lugar program. He traveled extensively. In the new position, Weber had oversight of the Nunn-Lugar CTR program executed by DTRA.



Andrew C. Weber

The new director of DTRA was Kenneth A. Myers.<sup>10</sup> He worked for Weber. From 1995 to 2003, Myers had served as a legislative assistant to Senator Lugar. He worked on issues of international-political-military affairs, national security issues, international treaties, nonproliferation, and European and former Soviet security issues. Myers organized and accompanied Senator Lugar on many of the annual trips to Russia and other nations. In 2003 he joined the U.S. Senate's Committee on Foreign Relations as a senior professional staff member. He became Lugar's senior advisor on European, former Soviet and Central Asian affairs, as well as nonproliferation, counterproliferation, arms control, and arms sales. He continued to travel with the senator to CTR working sites. In July 2009 Myers became DTRA's director. This agency had expanded; now its mission was to safeguard the U.S. and allied nations from weapons of mass destruction -- chemical, biological, radiological, nuclear, and high yield explosives. It provided the Defense Department and its worldwide military commands with capabilities to examine, reduce, eliminate, and to counter the threat and its effects. Implementing the Nunn-Lugar CTR program was one element in DTRA's mission.<sup>11</sup>



Defense Threat Reduction Agency

Kenneth A. Myers

In a large and complex national government like the United States, senior officials with specific knowledge and long experience with the international programs are invaluable. They provide leadership and support with Congressional committees, key officials in foreign governments, and, at times, the media. In the United States, experts working outside the national government were also influential. In 2007 and 2008, Congress directed the National Academy of Sciences to examine the Defense Department's biological threat reduction program. Two studies resulted, one examined the CTR biological programs and another looked at the entire Nunn-Lugar CTR effort. Directed by senior American scientists, policy leaders and academics, these studies produced reports that examined the department's efforts and recommended expansion.

## National Research Council Reports

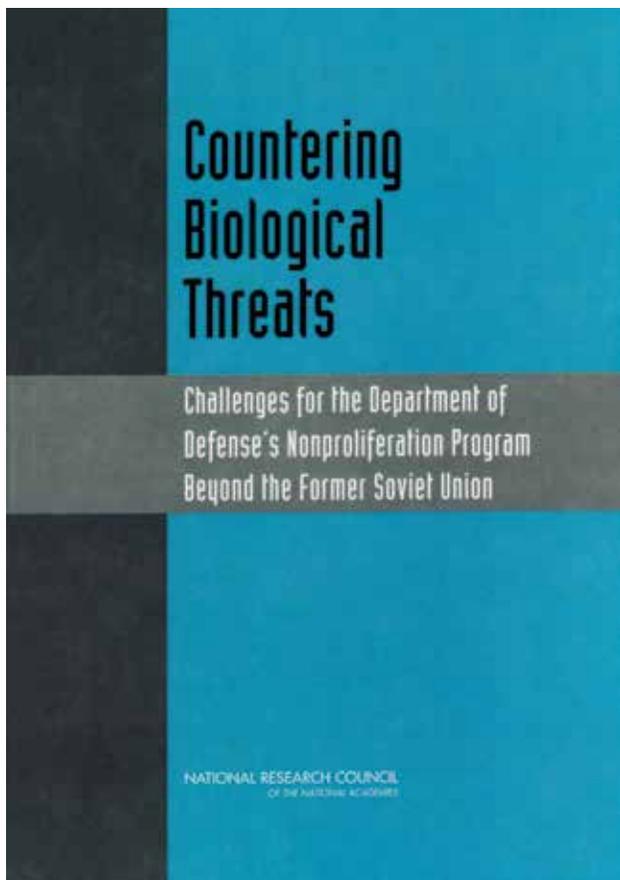
The National Research Council's report, "Countering Biological Threat: Challenges for the Department of Defense's Nonproliferation Program Beyond the Former Soviet Union (2009)," placed its recommendations into

a national security context. "The infrastructure required to support a bioterrorism attack is relatively small," the authors wrote, "but the infrastructure for countering an attack is complex."<sup>12</sup> They stressed that "dual use" was inherent in the biological field, and pointed out that in most human health and agricultural surveillance systems three functions were present: detection, diagnosis and therapy. To reduce proliferation of biological weapons and diseases, nations and international organizations had developed treaties, agreements, regulations and codes of conduct. The United Nations' International Health Regulations, endorsed by more than 100 nations, provided not only the legal framework, but defined specific public health diseases and situations that had to be communicated to the international community. Yet in the more than 130 nations that had endorsed the UN resolutions, very few states had developed adequate capabilities to counter biological threats. The National Research Council panel recommended that Department of Defense's Biological Threat Reduction Program begin a biosecurity engagement program with "at least ten countries outside the former Soviet Union (FSU) during the next five years."<sup>13</sup> These new engagements should be planned to last up to five years, with consideration given for extending activities another five years.

David R. Frantz and Ronald Lehman led a 15-person National Academy of Sciences committee that investigated the Department of Defense's entire CTR program.<sup>14</sup> In the final report, "Global Security Engagement, A New Model for Cooperative Threat Reduction (2009)", they praised the department's 15 year, \$7 billion dollar CTR effort to safeguard and dismantle huge stockpiles of nuclear, chemical and biological weapons and delivery systems in Russia and other regional nations. Then the committee recommended that the department expand its CTR program's mission geographically, update its form and function, and make it a national foreign policy objective, one enhancing global security. The strategic context, they argued, had changed: the Nunn-Lugar effort began in 1992 when there was need to assist Russia, Ukraine, and the other new nations that had inherited arsenals of weapons of mass destruction from the Cold War. Now, the context was the global spread of advanced technologies, the rise of terrorism, and the growing interdependence of peoples, economies and politics. The United States was the leading nation in negotiating and implementing bilateral and

international nonproliferation agreements; it was signing and leading implementation of innovative initiatives such as the Proliferation Security Initiative, the Global Initiative to Combat Nuclear Terrorism, and the United Nations Security Council Resolution 1540.<sup>15</sup>

As a consequence, the National Academy of Sciences' committee recommended reshaping Department of Defense's CTR program into a new 2.0 model. It would include a new set of programs and projects that would become part of a "cooperative network" that would include a wide range of nations, international organizations and nongovernmental partners. For instance, the committee thought that many nations in the Middle East, Africa and Asia might be willing to partner with the United States on efforts to build their emergency and disaster preparedness policies and programs. They might also wish to strengthen their port security networks, or develop programs to combat smuggling. Certainly, some nations would be willing to



National Research Council's report, "Countering Biological Threat: Challenges for the Department of Defense's Nonproliferation Program Beyond the Former Soviet Union"

establish partnerships to improve disease surveillance and identify potential biological attacks or disease outbreaks. If the Defense Department were to undertake new projects and programs, then it should reconsider its approach to using umbrella agreements, geographic limitations and metrics used to measure program success. In devising future programs, cooperation and flexibility should be the essential keys.<sup>16</sup>

Senator Lugar commended the report, noting that it would be an excellent resource for expanding Nunn-Lugar "beyond the former Soviet Union."<sup>17</sup> Lugar had traveled across the region annually, visiting CTR sites in Russia, Ukraine, Kazakhstan, Azerbaijan and Albania, examining project developments and discussing issues with national and local officials. In his published trip reports, the senator kept the cooperative assistance program in the public eye and before the administration.<sup>18</sup> In April 2009, the senator introduced legislation that would allow the Defense Department more flexibility in meeting unexpected threats in locations around the world. Up to 10 percent of the annual appropriations for the Nunn-Lugar CTR program could be used to meet urgent threats. The Secretary of Defense was allowed for the first time to accept funds from other nations, international organizations, and multinational entities that would finance CTR activities. The final authorization bill increased the FY2009 appropriation by \$20 million to \$424.1 million. The new funding would permit CTR to take on projects in new countries, principally in the area of biological threat reduction. When the conferees included the senator's legislative recommendations in the final act, Senator Lugar commented:

"Over the last 16 years, the Nunn-Lugar program has made tremendous progress on the destruction and dismantlement of massive Soviet weapons systems and the facilities that developed them. In the future, the program will be asked to address much more complex and diverse security threats in a larger number of countries."<sup>19</sup>

While this legislative authorization represented a major turning point in the Nunn-Lugar legislation, it also contained important "legacy" elements regarding eliminating ballistic missiles and submarine launched missile systems in Russia and Ukraine.

## Strategic Offensive Arms Eliminations (SOAE) across Russia

For more than 15 years, Russia had been a major recipient of Nunn-Lugar assistance. Using these funds, equipment, and management assistance, the Russian Minister of Defense and General Staff had agreed on numerous cooperative projects to eliminate strategic bombers, intercontinental ballistic missiles, and submarine launched ballistic missiles. All of these weapons reductions fell under the START Treaty. Russian nuclear storage sites had also received assistance, improving and strengthening the sites physical security, training, accounting, and emergency systems. In 1997 Marshal Sergeyev, Russian Minister of Defense, endorsed the START II Treaty, and announced that Russia would eliminate

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### New Strategic Context

- ★ Global Spread of Advanced Technologies
- ★ Rise of Terrorism
- ★ Interdependence of Nations
- ★ Expansion of CTR into Asia, Middle East and Africa

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154 SS-18 strategic missiles (10 warheads) and 16 launch control centers.<sup>20</sup> These missiles were intercontinental liquid rockets, with multiple warheads; they were prohibited by the treaty. U.S. CTR policy managers agreed to assist with these eliminations, setting up projects at SS-18 missile bases, modernizing rocket fuel storage facilities, destroying missile launch silos, and establishing a neutralization and elimination facility at Surovatikha Arsenal. A second elimination facility was established at the Piban'shur military base. By 2000, the Russian Ministry of Defense had added to the planned missile eliminations, now they included 206 SS-18s, 87 SS-17s, and 73 SS-19s.<sup>21</sup> All were excess to Russia's Strategic Rocket Forces. All would be neutralized and eliminated with Nunn-Lugar CTR assistance.

The Strategic Rocket Forces had three types of solid-fuel strategic rockets: SS-24s, SS-N-20s, and SS-25s. Marshal Sergeyev and the General Staff decided these missile

systems should be eliminated in accordance with the unratified START II Treaty. The U.S. agreed to assist Russia in eliminating these missile systems, their launchers and bases. The SS-24 missile systems were based in fixed silos and on special military railroad trains and rail garrisons. The U.S. agreed to eliminate 56 SS-24 missiles and 24 missile launchers deployed on three special military trains.<sup>22</sup> The SS-N-20s were solid rocket motors and components. By 1999, the Russian Ministry of Defense had declared that 91 SS-N-20 rocket motors were excess



SS-24 ICBM inside railcar

and should be eliminated.<sup>23</sup> The U.S. agreed. The SS-25 missile system differed considerably. It consisted of SS-25 single warhead missiles, mounted on a large military road vehicle. The Strategic Rocket Forces had fielded these missiles in very large numbers: 360 SS-25s missile systems in 40 regiments.<sup>24</sup> U.S. CTR policy officials negotiated with Russian officials over the schedule for eliminations of the missiles and launchers. For Marshal Sergeyev and his

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successors, the rate of decommissioning the SS-25 regiments was tied to the rate of deploying new SS-27 Topol-M missile regiments. This new missile system did not fall under any of the arms control treaties and it represented the future for the Strategic Rocket Forces.

The sequence for eliminating all these Russian missile systems began with the Russian Ministry of Defense and General Staff deciding to decommission specific missile regiments and naval submarines. The Russian Air and Space Agency was responsible for eliminating the missiles and launchers after decommissioning and turnover. All Nunn-Lugar CTR assistance was negotiated, planned, funded, and carried out under the U.S.-Russia SOAE implements agreements. From 1997 through 2007, there were multiple missile elimination projects across Russia, all involving Nunn-Lugar assistance, with American CTR managers, U.S. integrating contractors, Russian subcontractors, and local firms carrying out the elimination, storage, neutralization, and destructive work. By 2005, projects were underway at more than 30 strategic missile sites and submarine naval shipyards across Russia.

That year, working collectively, they destroyed 42 ICBMs, eliminated 16 ICBM silos, destroyed 31 ICBM mobile launchers, eliminated 29 SLBM launchers, eliminated 21 SLBMs, and destroyed one SSBN.<sup>25</sup> This level of activity continued in the following years, until 2008-2009. At that time, all SS-24 missiles (56) and launchers (24) had been eliminated. The next year Russia was caught up in the worldwide financial crises; the Russian Ministry of Defense budget was cut, slowing deployments of SS-27 Topol M regiments, and reducing decommissioning of SS-25 regiments. Then, the Russian ministries, General Staff, and military forces grew concerned over the negotiations on the new START Treaty. All of these factors reduced the number of U.S. Nunn-Lugar elimination projects in Russia.<sup>26</sup>

Reducing and eliminating SS-25 missiles and launchers became a major Nunn-Lugar CTR project. When decommissioned, the SS-25 missiles and launchers were transported from the Ministry of Defense' storage facilities at Khrizolitovyy and Surovatikha to Votkinsk, location of a large factory complex, with a missile disassembly and elimination facility.<sup>27</sup> At Votkinsk, the CTR program funded a Russian firm, Vokinskiy Zavod, a Federal State Unitary Enterprise, to dismantle the missiles into rocket motor stages and prepare them for transport to rocket motor burning



Defense Threat Reduction Agency

Joseph P. Harahan at the neutralization and elimination facility at Surovatikha

facilities located at Perm and Krasnoarmeysk.<sup>28</sup> For the SS-25 launchers, CTR funded the operation and maintenance of an elimination facility at Piban'shur military base. There was a dedicated fleet of military railcars transporting the SS-25 missiles and launchers from the rocket bases and storage facilities to Votkinsk, Khrizolitovyy and Surovatikha; CTR agreed to fund its operations, procurement and maintenance. Since 2005, the Raytheon Technical Services Company had served as the American integrating contractor, working on-site to plan, schedule coordinate, certify, and pay the subcontractors and workers.<sup>29</sup>

For more than a decade the CTR program worked with the Russian Ministry of Defense to eliminate SS-18 and SS-19 ICBMs. Starting in 1999, the Russian ministry established a missile elimination and dismantlement facility at Surovatikha Arsenal. The program funded construction and equipping of a large factory warehouse, and renovated another factory building for eliminating the missiles. Since these missiles, SS-18s and SS-19s were liquid rockets they were defueled as they were removed from the missile silos. However, some traces of heptyl fuel and amyl oxidizer remained in the rocket's casing. At the Surovatikha facility, they neutralized the residual fuel and oxidizer tanks. Then they cut up the missiles components: motor cases, missile stages, interstage skirts, dispensing mechanisms and nozzles. The Nunn-Lugar CTR program funded the management, subcontractors, equipment, and materials. As of the end of 2012, this Surovatikha facility had eliminated 225 SS-18s, 102 SS-19s, 98 SS-17s and 119 SS-11 missiles. Recently, the American integrating contract to

the Raytheon Technical Service Company expired, and a new contract was awarded in 2012 to a Russian firm, Center for Ground-Based Space Infrastructure, to manage and perform the elimination work.<sup>30</sup>

Russian submarine dismantlement activity decreased after 2008. One Delta III submarine, with 24 SS-N-19 SLBMs was under contract to be defueled and eliminated by the Joint Stock Company Ship Repairing Center “Zvyozdochka” at Severodvinsk, Russia.<sup>31</sup> The CTR contract was \$9 million to offload and inspect the missiles, defuel and neutralize them, disassemble, and destroy the rocket and guidance components. The 16 SS-N-18 SLBM launchers were removed from the Delta III submarine, defueled and eliminated. The Russian executive agent, the State Atomic Energy Corporation “Rosatom,” financed dismantlement of the submarine’s bow, stern, and sail sections. The CTR program funded the towing, launcher elimination, dismantlement of launcher compartments, and sealing and floating the reactor section. On this submarine, Canada financed the defueling of the nuclear reactors.<sup>32</sup> When this dismantlement work was completed in May 2011, the Russian Ministry of Defense did not decommission any submarines; consequently none were nominated for destruction. Then the Russian Federal Space Agency stated that it would be responsible for eliminating Russian submarine and missiles in future years.<sup>33</sup> What’s missing from this account is the declining record of the Russian government’s decisions to decommission and

eliminate its missiles, launchers, and submarines. As the chart below indicates, there was a sharp decline from 2008 through 2011.

During these years, frequent communications existed between American CTR officials and Russian Federal Space Agency leaders. Every six months, the leaders met in Moscow and reviewed every program and project. During the meetings, questions arose over the pace of the Russian Ministry of Defense’s plans for decommissioning and eliminating missile and submarine systems in the future. Russian ministry officials deferred, recommending that U.S. officials query the governmental leaders, directly. Slowly an impasse developed.<sup>34</sup> Resolution would be difficult; but negotiations over the U.S.-Russia CTR Umbrella Agreement in 2013 might produce some answers.

### Nuclear Security Programs with Russia

For more than 15 years American and Russian officials had discussed, negotiated, planned, and carried out projects on issues of Russian nuclear security. Since the same departments were involved - Russia’s 12<sup>th</sup> Main Directorate, U.S. Department of Defense, DTRA and recently the Department of Energy’s National Nuclear Security Agency (NNSA) - most senior officials knew the issues, programs and projects, and had established regular lines of communication. The 12<sup>th</sup> Main Directorate, a military department within the

Table 11-1. Russian Missile and Submarine Eliminations, 2008-2011

	FY2008	FY2009	FY2010	FY2011
<b>ICBMs Destroyed</b>	61	43	24	1
<b>ICBM Silos Eliminated</b>	11	2	0	0
<b>ICBM Mobile Launchers Destroyed</b>	27	6	37	2
<b>SLBM Launchers Eliminated</b>	0	20	0	0
<b>SLBMs Eliminated</b>	16	20	0	23
<b>SSBNs Destroyed</b>	1	1	0	1

Sources: Cooperative Threat Reduction Annual Report to Congress, Fiscal Year 2010; Cooperative Threat Reduction Annual Report to Congress, Fiscal Year 2011; Cooperative Threat Reduction Annual Report to Congress, Fiscal Year 2012; Cooperative Threat Reduction Annual Report to Congress, Fiscal Year 2013.

Russian Ministry of Defense, was responsible for nuclear warhead storage and transit within all regions of the Russian Federation. This large, military-staffed directorate maintained and operated centralized nuclear storage depots across Russia that stored and secured tactical, nuclear, and operationally strategic nuclear weapons. It operated like a military command, responsible for providing the nation's nuclear arsenal security, safety, technical maintenance, transportation, issuance, accounting, and disposal.<sup>35</sup> By 2008, leaders of the 12<sup>th</sup> Main Directorate, DTRA, and NNSA had been collaborating for more than a decade, participating in numerous technical meetings, bi-weekly telecoms, cables, letters and bi-annual executive reviews covering all aspects of the CTR projects on nuclear security and safety.<sup>36</sup> All projects were funded and carried out using the Nunn-Lugar program. As a result, security upgrades had been carried out at more than 89 nuclear weapons storage sites in Russia and there had been extensive security improvements in transporting nuclear weapons over the Russian railroad system.

In recent years, DTRA and NNSA program managers implemented CTR projects that directly enhanced security systems at 24 nuclear weapons storage sites controlled by the 12<sup>th</sup> Main Directorate. President Bush and Putin's Bratislava Initiative of 2005 was a major project, designed to secure Russian nuclear weapons storage facilities within three years. Three departments worked together, the 12<sup>th</sup> Main Directorate, DTRA, and NNSA, completing the project on the final day of the year 2008.<sup>37</sup> In the current program, DTRA's Nunn-Lugar managers assisted the 12<sup>th</sup> Main Directorate in projects for inventory management, personnel reliability, training and other special projects. NNSA managers assisted the Russian military in upgrading nuclear security at 65 storage sites belonging to the Russian Navy, Strategic Rocket Forces, and the 12<sup>th</sup> Main Directorate. In carrying out these projects, DOE provided support for training, personnel reliability, regulation development, and related projects. Often, DOD and DOE managers met and coordinated programs and projects. General Yevgeny Maslin, Director, 12<sup>th</sup> Main Directorate (1992 -1997) commented on the American assistance, "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. The fact that there have been several losses of fiscal materials from Minatom enterprises and the Northern Fleet also caused us

to devote serious attention to the problems of countering nuclear terrorism."<sup>38</sup>

Usually, DTRA program managers divided programs with the 12<sup>th</sup> Main Directorate into two parts: nuclear weapons transportation security and nuclear weapons storage security. In the area of transportation security, the U.S. CTR objective was to assist the Russian Ministry of Defense in shipping nuclear warheads via the Russian rail system to dismantlement locations or to national secure weapons storage sites. The CTR program paid for the trains that moved from military rail transfer points crossing to the dismantlement facilities or to the national nuclear weapons storage depots located across Russia. Beginning in 2000, the program had financed over 557 rail shipments by 2012. An American contractor was responsible for supporting the rail shipments, implementing maintenance with the military trains, transfers of custody, and destruction verifications. DTRA funded these rail shipments in 2012 at \$26.1 million.

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## Nuclear Security Program in Russia

- ★ Security upgrades at 89 nuclear weapons storage sites
- ★ Projects to improve inventory management, personnel reliability and training

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In addition, CTR funds paid for scheduled maintenance of railcars in the inventory that were being used in support of the nuclear weapons shipments. In 2012 scheduled maintenance was financed by Nunn-Lugar funds on 83 Russian military railcars at the Vologda VRZ and Tambov maintenance facilities. Continuing a previous, long running program, in 2012 CTR procured 15 new railcars and paid for the destruction 15 older railcars. The new railcars were equipped with satellite communications systems, modern Russian security systems, and special spare parts kits. Some of the new railcars were heated for the military guards travelling with each train.<sup>39</sup>

In the area of Russian nuclear weapons storage security, U.S. CTR policy and program managers worked closely with 12<sup>th</sup> Main Directorate officers to develop five programs.

To provide the Russian Ministry of Defense with a secure inventory management system for its nuclear arsenal, CTR program managers developed a project, the Automated Inventory Control and Management System for Strategic Rocket Forces. The U.S. agreed to purchase Russian proprietary software and computers and contracted with Black and Veatch, a Moscow firm, to install it at 11 Strategic Rocket Forces sites.<sup>40</sup> While the U.S. CTR program paid for the procurement, installation, and training, it did not have access to the SRF sites.

Another program, Site Security Enhancement and Sustainment was developed with officers from the Russian Ministry of Defense's 12<sup>th</sup> Main Directorate.<sup>41</sup> Designed to incorporate multiple projects, it had the objective of providing Russia with the capacity to sustain its nuclear weapons security system. It authorized a series of CTR-funded projects in small arms training systems, live fire ranges, perimeter surveillance security systems, personnel reliability programs, new mobile repair vehicles, a centralized operations management system, a special program for vendor services contracts, a program to replace failed parts to site security systems, and equipment for the Scientific Research Center in St. Petersburg. Through 2012, CTR managers had spent \$48.5 million funding these projects.<sup>42</sup> Three other projects were in various stages of completion.



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Automated Inventory Control and Management System

Officers at the 12<sup>th</sup> Main Directorate requested a construction of a new facility at central location in Moscow to manage all of the security sustainment activities. Within the Defense Department, CTR policy managers agreed to

renovate an existing MOD facility in Moscow and to procure and install basic security systems. Bechtel was awarded the contract and began working at the site and facility at Sokilniki.<sup>43</sup> In the field, CTR project managers and 12<sup>th</sup> Main Directorate officers agreed to procure and deliver six modular operational repair buildings; so that military work crews would be capable of performing maintenance and repairs at the Ministry of Defense's nuclear weapons storage sites.<sup>44</sup> This project included acquisition of mobile repair vehicles and diagnostic and operational training. An earlier project, the Security Assessment and Training Center expansion, neared completion. Working together, American and Russian managers designed a new training facility, with new classrooms, a 220-person dormitory, maintenance workshop, a five bay garage, and a centralized warehouse.<sup>45</sup>

## Ukraine begins to eliminate its SS-24 Rocket Motors

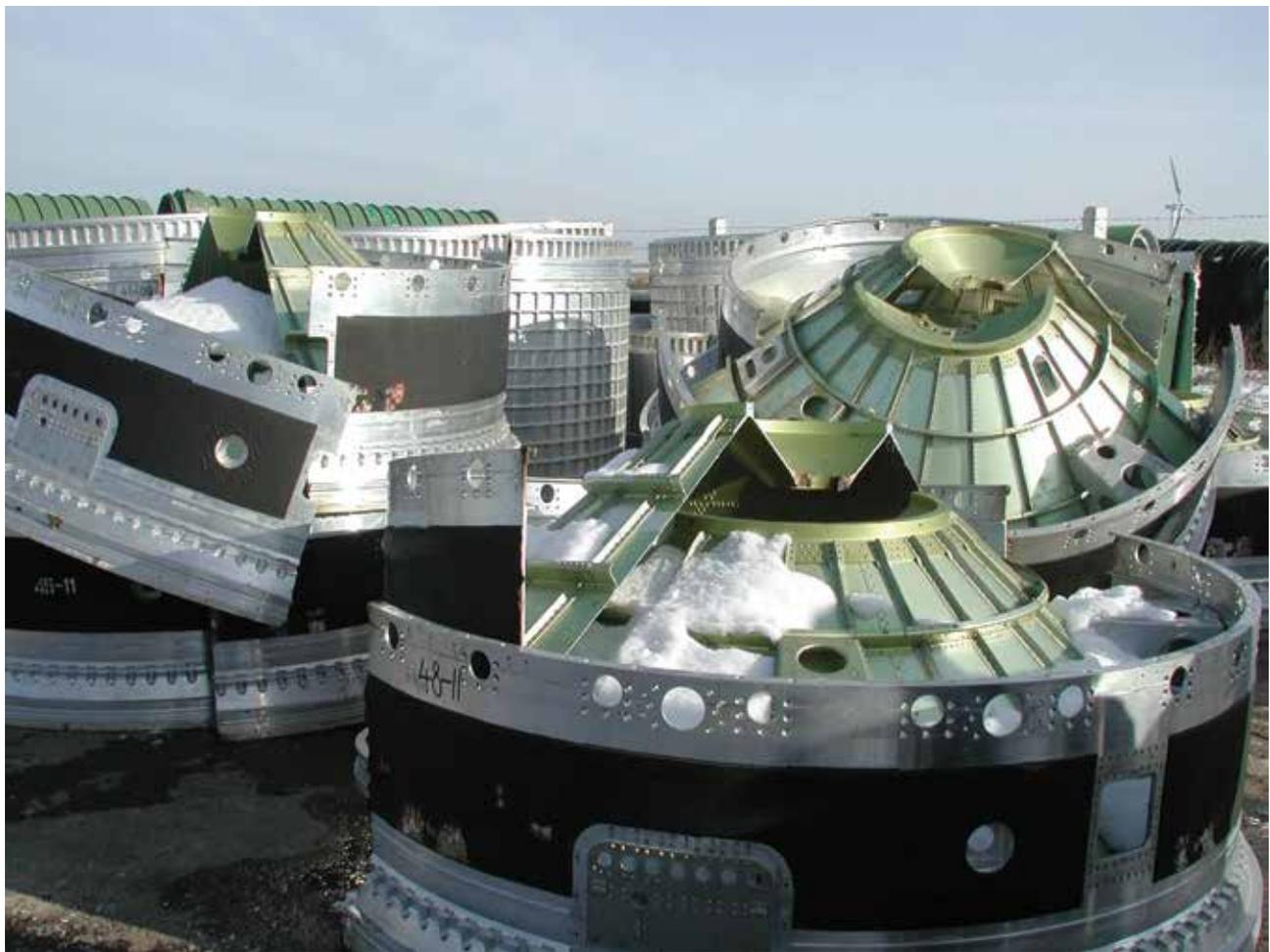
When Ukraine agreed to eliminate its SS-24 strategic rocket forces in 1998, it worked closely with the U.S. Nunn-Lugar CTR program to remove the missiles from the silos in the field and to transport them to Pavlograd, a missile factory complex in eastern Ukraine.<sup>46</sup> The U.S. pledged to store the rocket motors and assist in their elimination. The solid rocket motor missile had three stages and the U.S. agreed to equip an older factory with new environmental and security equipment to warehouse the 156 motor stages. An American contractor operated and maintained the warehouse facility. A Ukrainian firm, Pavlograd Chemical Plant (PKhZ), tried for several years to wash-out the solid rocket fuel from the missiles and convert it into explosives for excavating minerals. They failed. Then in 2007, CTR policy officials offered to pay Ukraine a firm fixed price for empty rocket motor casing.<sup>47</sup> Ukraine agreed, although the elimination work began slowly.

Then in April 2010, Ukrainian President Yanukovich attended the Global Nuclear Summit in Washington where he asked President Obama to complete the Water Washout facility at Pavlograd. Obama agreed stating that the U.S. would honor its "original commitments."<sup>48</sup> Two months later a DTRA/OSD team went to Pavlograd to assess the facility. They concluded that the CTR policy officials should authorize DTRA's CTR program managers to purchase an

incinerator to flash burn the rocket motors and fund the construction of a reduction facility, and a flash burn facility at Pavlograd.<sup>49</sup> The incinerator was capable of burning the SS-24 propellant, the carbon graphite motor casings, and selected anti-personnel mines. Planning began with the National Space Agency of Ukraine and the Pavlograd Chemical Plant. At the same time the plant proceeded, using its own funds, with plans to build and operate a full scale water washout facility. In 2011, President Yanukovych commissioned that facility and they began washing out the 3<sup>rd</sup> stages of the 163 rocket motors. Construction began on the U.S. CTR-funded reduction facility and a flash burn facility, slated for completion and turn over to Ukraine in April 2013. The current budget for this project through completion was \$83.7 million. The original U.S.-Ukraine agreement remained in effect: the U.S. would pay a fixed price for each empty motor casing eliminated.<sup>50</sup>

## Expansion of chemical weapons destruction beyond Russia

Construction of Russia's Chemical Weapons Disposal Facility at Shchuch'ye finished in May 2009 when the dedication ceremony opened the large, new, modern elimination plant. Shchuch'ye was a storage area for 1.9 million nerve agent-filled rocket shells, portable weapons, and bulk-filled rocket warheads.<sup>51</sup> Since Russia had signed and ratified the UN Chemical Weapons Convention, it was working with many other nations to eliminate its huge chemical arsenal. The United States' Nunn-Lugar program had worked for many years with Russian managers and staffs on this project – designing, planning, building, equipping, training, and securing the modern elimination plant. In 2004, the U.S. set a cap on U.S. assistance for the plant at \$1.039 billion. From the beginning, Russia stated that it would



Eliminated SS-24 ICBMs, Pavlograd

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operate the facility and eliminate the chemical weapons. After May 2009, the plant began operations. Approximately a year later, Russia requested that Department of Defense's CTR program provide technical advice and assistance for eliminating chemical weapons at Shchuch'ye and one other site, Kizner.<sup>52</sup> After deliberation, CTR policy officers agreed to support the elimination process at the Shchuch'ye plant, but delayed assistance to the Kizner facility until completion of its construction. A CTR contract was granted to Parsons Government Services International in May 2011 for technical advice and assistance through December 2015. Nunn-Lugar CTR managers estimated the project would cost approximately \$9-10 million a year.<sup>53</sup>

The Libyan national government requested support from the United States in December 2011 to improve the security and safety of a chemical weapons storage facility and a destruction facility.<sup>54</sup> Libya had an interesting history with weapons of mass destruction. In 2003, Colonel Muammar Gadhafi, then the Libyan dictator, renounced the nation's WMD, and invited American and British experts to examine the production, testing, and weapons storage sites. Then he established a new program to destroy the weapons. Libya joined the United Nations CWC Convention, invited its experts to survey its modest holdings of mustard agent (23 metric tons) and nerve agent precursor chemicals (1,300 metric tons), and set up a chemical weapons disposal facility.<sup>55</sup> Suddenly, in August 2011 Colonel Gadhafi's regime was overthrown and two months later the transitional government found two undisclosed caches of chemical weapons. They invited the UN's CWC inspectors to return to Libya. The inspectors confirmed that the full stockpile of previously declared sulfur mustard weapons had not been destroyed, plus they identified the newly discovered cache of weapons as munitions filled with sulfur mustard.<sup>56</sup> The transitional government wanted these chemical weapons destroyed, and they requested the U.S. government's assistance.

Within the U.S. government, the Nunn-Lugar CTR program had amassed years of technical, financial, and managerial experience in working with Russia's chemical weapons destruction facilities. Acting quickly, the Department of Defense assigned DTRA the task of cooperating with and planning assistance with Libya.<sup>57</sup> The agency would provide assistance on physical security and safety improvements to the Libyan CW storage and destructions sites, develop training programs for the Libyan guard forces, provide assistance

in developing new security and safety concepts during elimination operations, and make recommendations on the CW destruction operations. In January 2012, a U.S.-Libyan meeting in Tunis, Tunisia defined the safety and security requirements and initiated discussions on CW destruction technologies. Subsequently, joint cooperative meetings were held in the United States and The Hague, Netherlands. In July, Parsons Governmental Services International received a CTR contract to plan and provide agreed upon assistance to Libya. Direct assistance, to include site visits to evaluate the existing CW facility and to make recommendations, by the contractor and project managers were slated for 2013.<sup>58</sup>

## New START Treaty and Nuclear Security Summit

For almost 20 years, United States and Russian Federation leaders declared that the strategic arms reduction treaties, which they signed and ratified, would provide stability in the nation's nuclear relations at significantly lower levels of strategic delivery systems and nuclear warheads. Nunn-Lugar CTR assistance was linked to these treaties. Since 1991, there had been four treaties: START I (1991), START II (1992), Moscow Treaty (2002) and the New START Treaty (2010). Presidents Obama and Medvedev signed the latest treaty in Prague in April 2010. Speaking at the ceremony, Obama acknowledged that the two nations had been drifting apart, but "this day" demonstrates the "determination of the United States and Russia - the two nations that hold over 90 percent of world's nuclear weapons - to pursue responsible global leadership."<sup>59</sup> Medvedev observed, "A truly historic event took place: A new Russia-U.S. treaty has been signed for the further reduction and limitation of strategic offensive arms."<sup>60</sup> Both men pledged to pursue ratification quickly. The new treaty set aggregate limits on warheads (1,550), on the combined limits for deployed and non-deployed strategic launchers (800), and on a separate limit (700) on deployed strategic launchers - ICBMs, SLBMs, and heavy bombers.<sup>61</sup> Within these limits, each nation had the flexibility to structure its strategic forces, provided it met the treaty's limits within 10 years.

During ratification of the New START Treaty, many senior officials from the Obama administration testified before the U.S. Senate's Foreign Relations Committee, including James N. Miller, Principal Deputy Undersecretary of Defense for Policy, and Kenneth A. Myers, Director, DTRA. Miller focused

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## New START Treaty

- ★ Strategic weapons limit - 1,550
  - ★ Deployed/Non-deployed ICBM Launchers - 800
  - ★ Deployed Strategic Launchers - 700
- 

on treaty inspections, weapons conversions and eliminations, and relationship of the treaty and the Nunn-Lugar cooperative threat reduction program. On the latter topic, Miller said that for almost 20 years the Nunn-Lugar program had worked with Russia and other nations in the region, supporting the elimination of weapons of mass destruction and their associated delivery systems. As of June 2010, he explained, the CTR program had supported the elimination of 672 ICBM launchers, 783 ICBMs, 476 SLBM launchers, 651 SLBMs, 155 heavy bombers and 905 air-to-surface missiles. Further, it

supported Russia's deactivation of 7,545 nuclear warheads. All of these eliminations, Miller continued, were completed in accordance with the START treaties. Future Nunn-Lugar CTR projects in Russia, he asserted, would "compliment New START Treaty objectives."<sup>62</sup> Myers spoke at length about DTRA, its missions, participation in treaty negotiations, experiences in on-site inspections and escorts, team organization, team preparations and the Nunn-Lugar program. He explained that the Nunn-Lugar program was currently engaged in "decommissioning, disassembly, dismantlement, and elimination activities" across Russia.<sup>63</sup>

Senator Lugar also testified, supporting the new treaty, and explaining how he had traveled across the regions of the former Soviet Union for many years, witnessing the safeguarding and destruction of weapons systems. During these years, U.S.-Russian relations had been through many highs and lows in the post-Cold War era. However he concluded that START inspections and consultations and the corresponding threat reduction activities of the Nunn-Lugar program have been a constant. "They served," Lugar believed,



U.S. Embassy, Prague, Czech Republic

U.S. President Barack H. Obama (l.) and Russian President Dmitry A. Medvedev (r.) at the signing of the New START Treaty in Prague, April 2010

“to reduce miscalculation and to build respect.”<sup>64</sup> When the committee voted, it endorsed the new treaty, and it went to U.S. Senate for the vote on ratification. In late December 2010, the U.S. Senate ratified the New START Treaty by a vote of 71 to 26. One month later the Russian State Duma also ratified the treaty, 350 to 96. When Secretary of State Clinton and Foreign Minister Lavarov exchanged the instruments of ratification, the new treaty entered into force on February 5, 2011.<sup>65</sup>

While the New START Treaty’s signature, debate, and ratification were underway, President Obama convened an international Nuclear Security Summit in April 2010 in Washington, D.C. Leaders from 45 nations, including 38 heads of state, gathered at the meeting and addressed how to secure nuclear materials and how to prevent acts of nuclear terrorism and criminal trafficking. President Obama declared that nuclear terrorism “is one of the greatest threats to global security – to our collective security.”<sup>66</sup> He repeated his call for an international effort to secure vulnerable nuclear materials around the world within four years. As the international conference ended, the leaders signed a communique stating that nuclear terrorism was “one of the most challenging threats to international security.” They recognized in the communique that highly enriched uranium and separated plutonium required special precautions, they endorsed the call to secure all vulnerable nuclear materials in four years, encouraged the full implementation of all existing nuclear security commitments, and reaffirmed the essential role of the International Atomic Energy Association. Further, the collected national leaders recognized the need for cooperation among states to prevent and respond to incidents of illicit nuclear trafficking. Several national leaders announced that their nations were removing stockpiles of highly enriched uranium and converting the materials to low-enriched uranium.<sup>67</sup> Two Nunn-Lugar projects developed from the summit.

### Spent Nuclear Fuels Project with Russia and a Center of Excellence for Nuclear Security in China

The first shipment of spent nuclear fuel went from a nuclear submarine based at Russia’s Zveda Naval Shipyard to the reprocessing facility at Mayak in June 2011. Canada funded the defueling operation, and DTRA funded, through Nunn-Lugar, the Russian rail transportation to Mayak.<sup>68</sup> A second shipment of spent nuclear fuel was transported three

months later from Zveda to Mayak. Rosatom, the Russian Ministry of Atomic Energy, supported both shipments. Another submarine, located at the former naval base at Gremikha, was defueled with French assistance, and the spent nuclear fuels loaded into casks and transported to the Atomflot facility in Murmansk. CTR program managers financed this transportation shipment, via boat, and funded modification of the spent nuclear fuels casks. Also, CTR agreed to fund the transportation via rail of the caskets of spent nuclear fuel across Russia from Murmansk to Mayak. From yet another submarine, OSCAR 617, the spent nuclear fuels were offloaded, placed into special casks, and stored at the storage pad at Atomflot. The CTR program agreed to transport these materials from Murmansk to Mayak.<sup>69</sup> All of these spent nuclear fuels shipments met the objectives, articulated by President Obama in 2009, to secure vulnerable nuclear materials within four years.

During the 2010 Nuclear Security Summit in Washington, D.C., Chinese President Hu Jintao and President Obama agreed to support the establishment of a Chinese Nuclear Security Center of Excellence.<sup>70</sup> Nine months later, in January 2011, the two states signed a memorandum of agreement on cooperation in establishing a Center of Excellence for Nuclear Security. Then the following month, U.S. Secretary of Energy Steven Chu signed an agreement with officials from the People’s Republic of China on the project. Specifically, they agreed jointly design, fund, and establish a regional Center of Excellence on Nuclear Security in Beijing to promote nuclear security and safeguards. Also, the memo stated responsibility for facilitating environmental performance testing of physical protection systems, consistent with statutory restrictions and requirements. Further, the CTR program would facilitate the training, using non-live fire drills, of Chinese security forces responsible for the protection of nuclear facilities. During the following two years, there were a series of meetings, devoted to technical discussions. Ground breaking ceremonies for the new Center of Excellence facility in Beijing was scheduled for the spring or summer of 2013.<sup>71</sup>

### Cooperative Biological Engagement Program

The Obama administration issued a Presidential Policy Directive, “National Strategy for Countering Biological Threats,” in November 2009, which outlined its strategy

for countering biological threats.<sup>72</sup> Laura Holgate, NSC, and Andrew Weber and Ashton Carter, DOD, assisted in writing, reviewing, and fighting for this new presidential-level national strategy. The Defense Department had responsibility for its implementation. The strategy began with a statement recognizing that there had been an “unparalleled” period of advancement and innovation in the life sciences, globally. Significant health benefits had resulted, alongside of the development of lethal biological agents. Biological weapons, defined broadly, presented a major challenge to national security. The strategy directed the development of a national plan, a budget, managerial and policy oversight and extensive coordination. One element called for the expansion of international partnerships and bioengagement, including support for public health efforts, nonproliferation, and security and training programs.<sup>73</sup>

President Obama issued another important policy statement, National Security Strategy, in May 2010. He explained how the nation’s military strategy was connected to its people, its past, and its role in the contemporary world. “The international order we seek,” Obama wrote in the opening letter, “is one that can resolve the challenges of our times – countering violent extremism and insurgency; stopping the spread of nuclear weapons and securing nuclear materials; combating a changing climate and sustaining growth...”<sup>74</sup> A section in this strategy statement covered reversing the spread of nuclear and biological weapons. “To protect against biological threats,” required working with domestic and international partners, “by promoting global health and reinforcing norms of safe and responsible conduct.”<sup>75</sup> Clearly, the president and his advisors were internationalists, engaged in strategies that would reduce nuclear weapons, nuclear materials, and biological weapons and materials.

In developing international biological programs there were two critical keystones: establishing cooperation with other national governments and their public health agencies and developing coordination with other U.S. governmental departments, universities and scientific institutes, international non-profit organizations and the private sector. Unlike reducing nuclear weapons which had a final end point, cooperative biological programs engaged a nation’s public health in the present and the future. In providing assistance programs, the public health field had many international organizations, international corporations, and nongovernmental organizations. The

Defense Department had 15 military commands, institutes and laboratories involved with biological threat reduction programs.<sup>76</sup> Six other federal departments and agencies had responsibility for programs countering biological threats. To develop and institute cooperative threat reduction projects in this field required clear objectives, sharp management, funding, and discipline. In FY2009, Congress authorized \$20 million for a series of “New Initiatives” for the Department of Defense’s CTR program to expand the Cooperative Biological Engagement Program, focusing on nations in Africa and Southern, Southeastern, and Western Asia.<sup>77</sup> Led by Senator Lugar, Congress set program objectives for developing new biological programs under this initiative: establish with

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## Cooperative Biological Engagement Program

- ★ New CTR Program with six nations
  - ★ Biological Safety and Security
  - ★ Cooperative Biological Research
  - ★ Disease Surveillance, Detection, Diagnosis and Reporting
- 

cooperating nations in these regions the capacity for building biosafety, biosecurity, and bio surveillance systems that would allow them to recognize and secure especially dangerous pathogens. Other related objectives outlined building the nation’s capacity to recognize and communicate data about emerging infectious diseases that could become pandemic threats. In designing new projects, Congress expected the Defense Department would work with the Department of State’s biological engagement program and the U.S. Agency for International Development.<sup>78</sup>

Underlying Congress’s initiative was an acknowledgment that Defense Department’s CTR program had already developed significant biological threat reduction programs with the nations of the former Soviet Union. That effort began in Russia in 1997, when the U.S. CTR policy officials negotiated agreements with the directors of Russia’s biological institutes to assist them in safety and security projects. The U.S. was already organizing the destruction of the region’s abandoned biological weapons plants. Then during the next

## With Courage and Persistence

decade, U.S. CTR officials developed new comprehensive biological programs with Georgia, Kazakhstan, Uzbekistan, Ukraine, Azerbaijan and Armenia. Andrew Weber and Jim Reid traveled across the region, meeting with national health and veterinary officials and developing cooperative agreements in three areas: biological safety and security (BS&S), cooperative biological research and engagement (CBR) and disease surveillance, detection, diagnosis, and reporting (DSDDR).

All former Soviet Union nations had national public health laboratories and animal clinics and institutes. U.S. CTR officials persuaded the governments and the national health leaders to accept new biosafety and biosecurity programs in their laboratories and institutes. Biological safety, under an internationally recognized definition, was “the application of knowledge, techniques and equipment to prevent personal, laboratory, or environmental exposure to potentially infectious agents and biohazards.”<sup>79</sup> It was an international standard, one which emphasized facility containment practices. Biosecurity encompassed direct and indirect measures that

contributed significantly to preventing inappropriate persons from gaining access to materials, equipment, or technology that could be used in producing biological weapons; or to detect, characterize, or respond to outbreaks of diseases that involved biological pathogens or toxins.<sup>80</sup>

All programs were governed by cooperative, bilateral umbrella agreements, followed by implementing agreements, which led to further negotiations and contractual agreements. Biological risk assessments, using international recognized firms, started a process that became the basis for planning projects, funding, construction, equipping and training. In some nations, new central reference laboratories were designed, constructed, and equipped; in other nations agricultural diagnostic labs were constructed and equipped, and all of the nation’s extensive training courses were instituted. Engagement with national scientists conducting research was encouraged. A special program was instituted, one which established a national disease surveillance system capable of detecting, diagnosing, and reporting biological weapons-related materials.<sup>81</sup>



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Conducting research at the Richard G. Lugar Center for Public Health in Georgia

**Table 11-2. Biological Threat Reduction Program, FY 1997-2008**

Azerbaijan	\$55,358,307
Armenia	\$1,723,385
Georgia	\$189,648,957
Kazakhstan	\$122,106,796
Russia	\$93,250,886
Ukraine	\$26,040,036
Uzbekistan	\$122,405,441
<b>TOTAL</b>	<b>\$610,533,808</b>

*Source: Department of Defense BTRP Program Manager, January 13, 2009*



S. Elizabeth George

Between the years 1997-2008, the CTR Biological Threat Reduction Program funded an extensive number of projects and programs in Russia, Georgia, Kazakhstan, Uzbekistan, Ukraine, Azerbaijan and Armenia. As the table indicates, all nations received CTR funds. By the end of 2008, the Department of Defense’s Biological Threat Reduction Program was the largest biological nonproliferation program in the world.<sup>82</sup>

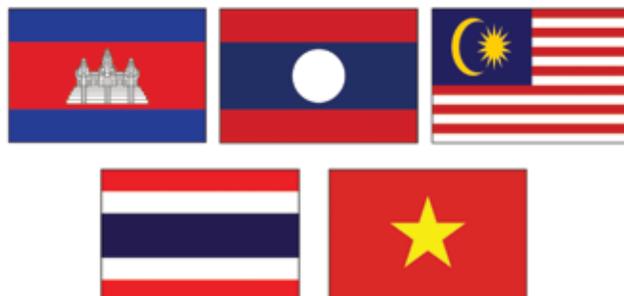
During the next four years, 2009-2012, the cooperative biological threat reduction program expanded in funding, changed its name, and engaged with new nations. CTR program managers obligated more than \$735 million during these years. Each year, it was the CTR program’s largest expenditure.<sup>83</sup> Congress changed the name, authorizing it in 2010 to become the Cooperative Biological Engagement program. New leaders emerged. As explained earlier, Andrew Weber became the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs. At the CTR implementing agency, DTRA, Kenneth Myers became the director and he selected S. Elizabeth George as the new CTR director. George, a member of the federal government’s senior executive service, held a PhD in microbiology, and had directed biological and chemical threat reduction programs in Department of Homeland Security and the Department of Energy.<sup>84</sup> She led the design, deployment, and transition of BioWatch, the nation’s first civilian biological threat agent monitoring system. The author of numerous scientific journal articles, George had presented research reports at national and international forums.

As the CTR director at DTRA, George focused on two areas. First, she concentrated on expediting the expansion of the CTR Cooperative Biological Engagement (CBEP) program outside the region of the former Soviet Union nations. Congress had directed this expansion; they wanted new cooperative engagements with nations in Africa and Asia. Secondly, George worked to develop a new CTR strategic plan, with Department of Defense policy offices, Threat Reduction and Arms Control (NCB) and the Cooperative Threat Reduction Policy.<sup>85</sup> The biological engagement program retained its three main sections: Biological Safety and Security, Cooperative Biological Research and Engagement, and Disease Surveillance, Detection, Diagnosis, and Reporting. The program had several objectives. It sought to secure and consolidate each nation’s collections of especially dangerous pathogens and associated research into a minimum number

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2012 expansion of CTR biological programs in Africa  
Top Row (l.-r.): Kenya, Uganda and Tanzania  
Bottom Row (l.-r.): Rwanda, Burundi and South Africa



2012 expansion of CTR biological programs in Southeast Asia  
Top Row (l.-r.): Cambodia, Laos and Malaysia  
Bottom Row (l.-r.): Thailand and Vietnam

of secure human and animal health laboratories and related facilities. It worked with each nation and the regions to enhance the capacity to prevent the sale, theft, diversion, or accidental release of biological weapons-related materials, technologies, and expertise by improving their biological safety and security standards and procedures. It encouraged new programs to enhance the nation's capability to detect, diagnosis, and report natural or man-made especially dangerous pathogens from endemic and epidemic diseases, bio-terror attacks, or potential pandemics. Throughout all these programs, it sought to develop capabilities that were sustainable. Finally, it facilitated engagement of partner nation's and the region's scientific and technical personnel in research projects. In carrying out all of these cooperative biological engagement programs, the U.S. government insisted that the cooperating nations and their health officials comply with the World Health Organization's International Health regulations, the World Organization for Animal Health standards, and the United Nations' Food and Agricultural Organization guidelines.<sup>86</sup>

The Congressional-directed cooperative biological engagement program expanded very slowly. As with the development of all the CTR biological programs in new countries, the State Department was involved in establishing initial contacts, meetings, briefings, and proposals that led a check on the worst aspects. In 2009, Afghanistan and Pakistan were receptive to CTR program with biological safety and security measures.<sup>87</sup> In Afghanistan, CTR program managers worked with national health officials to improve the safety and security of Kabul's Central Public Health Laboratory. They worked closely with the U.S. Department of State, U.S. Embassy, Kabul, and the U.S. Agency for International Development.

Research projects were initiated with a few Afghanistan scientists. In 2010, the Cooperative Biological Engagement Program expanded, holding major biological workshops in Kenya and Uganda. Health officials and scientists from seventeen African nations attended the workshops. Then in 2011, CTR projects were underway in Afghanistan, Pakistan and Kenya. In Kenya, CTR program managers developed a cooperative program to complete biological safety and security upgrades at the Kenyan Medical Research Institute in Nairobi. Negotiations were underway in Iraq, with senior health ministry officials.<sup>88</sup> During 2012, expansion continued in East Africa, South Africa and Southeast Asia.

The East African Regional Engagement involved five nations: Kenya, Uganda, Tanzania, Rwanda and Burundi. The Defense Department's Cooperative Biological Engagement program objectives were to assist in building reliable disease surveillance, diagnosis, and reporting networks; to encourage common practices on biological safety and security standards and regulations; to establish a regional baseline of endemic diseases; and to develop cross border cooperation and scientific cooperation.<sup>89</sup> Regional workshops provided a forum for national health leaders and scientists to discuss the objectives, best practices, and a regional approach to bio surveillance. From the United States, Andrew Weber, Department of Defense, and Elizabeth George, DTRA, Jed Royal, CTR Policy Director and others participated in the workshops.

While CTR projects varied in each nation, usually they began with risk assessments, examining a nation's biological health and veterinary laboratories, and evaluating biological safety and security and reporting networks. In South Africa, officials from the DOD's CTR biological engagement program worked with the U.S. Embassy, Pretoria, Department of

State, U.S. Department of Agriculture, and the CDC Global Disease Detection Center to improve the nation's human and animal disease detection networks and its biological risk management systems. South Africa was a modern state, with established human health institutes, excellent universities, and an interest in these programs. The Academy of Sciences of South Africa was awarded a CTR contract to assess the state of biosafety and biosecurity in laboratories across the nation. South Africa's objective was to become a regional leader in biorisk management and biosurveillance.

During 2012, Andrew Weber and CTR senior managers traveled to the Southeast Asia Region, and held meetings and discussions with leaders in five nations, Cambodia, Laos, Malaysia, Thailand and Vietnam. This cooperative engagement involved regional conferences, specific proposals and agreements. Some nations had considerable expertise in biosecurity and risk management, like Thailand, others had developed strong health institutes, like Malaysia, and still others had long partnerships with international foundations and foreign research institutes, as in Laos. All national health leaders were receptive to the CTR program, its concepts, and long experience.<sup>90</sup>

During these years, 2009-2012, CTR's Cooperative Biological Engagement program was especially active in Armenia, Azerbaijan, Georgia, Kazakhstan, Uzbekistan, Ukraine, and Russia. Bilateral umbrella and implementing agreements had been negotiated and signed with all these nations. In Armenia, CTR program managers contracted with Sandia National Laboratories to conduct a biological risk assessment, and to make recommendations for policy changes, biological safety and security projects and sustainment measures. The Armenian government was looking for a site to construct a central laboratory to consolidate especially dangerous pathogens collected from humans and veterinary animals.<sup>91</sup> In Azerbaijan, CTR program managers worked with Ministry of Health officials to design a permanent Central Reference Laboratory (CRL) in Baku. Bechtel National received a CTR contract to oversee construction management of the laboratory, including equipment, security systems, training, and commissioning support.

Across Azerbaijan there was construction and equipping of nine smaller diagnostic laboratories and one Ministry of Defense facility in Baku. The State Veterinary Service completed a pilot program using the Electronic Integrated

Disease Surveillance System (EIDSS) which enhanced the capability to detect, diagnose, and report endemic and epidemic occurring diseases with especially dangerous pathogens. This computer-based program concluded the pilot program at seven sites and tested it at another 124 sites across Azerbaijan. Finally, CTR program managers supported training courses in Azerbaijan for clinician training, epidemiology, laboratory procedures, computer systems, and biological safety and security.<sup>92</sup>

When Senator Richard G. Lugar came to Tbilisi, Georgia in August 2012, he participated in a dedication ceremony for the Georgian Central Public Health Reference Laboratory.<sup>93</sup> Planned, designed, constructed, and equipped with CTR-funds, President Mikhail Shaakashvili declared the new laboratory would be named the Richard G. Lugar Center for Public Health. Its mission, according to President Shaakashvili, was to promote public and animal health through infectious disease detection, epidemiological surveillance, and research for the benefit of Georgia, the Caucasus region, and the global community. Then, the President and Senator participated in a groundbreaking ceremony for a new administration building for the Georgian National Center for Disease Control. That



Dedication ceremony of the Richard G. Lugar Center for Public Health in Tbilisi, August 2012

Defense Threat Reduction Agency

center had been extensively outfitted with CTR-funded biological safety and security equipment and upgrades. The new administrative facility, located on the Lugar Center's campus, will host scientists and physicians from Georgia, along with specialists from the U.S. Center for Disease Control's Global Disease Detection program, and technicians from the U.S. Army's Walter Reed Army Institute of Research. Georgia anticipated that these two complimentary centers, the Lugar Center for Public Health and the National Center for Disease Control, would become a regional center for biological and scientific excellence, the site of a U.S. overseas laboratory and the cornerstone for nation's infectious disease surveillance system.<sup>94</sup>

Extensive training courses, funded by the CTR program, were conducted at the centers, with students receiving courses in clinical training, epidemiology, laboratory procedures, computer systems, animal training, laboratory quality management systems, vector surveillance, and biological safety and security. During 2012, there were 317 training courses, with 99,000 student contact hours. Georgian scientists at the center participated in two major research projects; they also conducted research and surveillance of local lakes and the Black Sea; and they continued their work in investigating local outbreaks of anthrax and tularemia. All these research projects were reviewed and supported by the CTR-funded program.<sup>95</sup>

Activities in Kazakhstan consisted of constructing a small biological safety laboratory, level 3 (BSL-3), at the Research Institute for Biological Safety Issues in Otar. In the nation's largest city, Almaty, a central reference laboratory was under construction, with planning underway for equipment, training, and operational procedures. As in the other nations, there was extensive training and collaboration on research proposals and projects. Five major research projects were underway in Kazakhstan, collectively examining the prevalence, spatial distribution, and genetic diversity of many pathogens involved in diseases in the region. In Uzbekistan, the U.S. Embassy in Tashkent worked with Uzbekistan's Ministry of Foreign Affairs to develop a cooperative biological program. CTR program managers completed a detailed design of the Ministry of Health's new training center, located at Tashkent Institute of Postgraduate Medical Education. Training courses were offered and research projects approved. Uzbek scientists participated in international scientific conferences in the United States.<sup>96</sup>

Ukraine was a large nation with established public health and veterinary institutions. American CTR officials had worked with various government ministries for more than 15 years. During 2012 Nunn-Lugar officials worked with the Ministry of Health to complete biological safety and security enhancement projects at three diagnostic laboratories at Vinnitsa, Zakarpatye and Lviv. They also initiated design and construction work on three remaining diagnostic laboratories at Kharkiv, Kherson and Ternopol. Ukraine's Ministry of Health and the CTR program had worked to develop a network that enhanced disease surveillance, detection, diagnostics, and reporting. In 2012, this system achieved initial operational capability. Ukraine received new mobile response vehicles and associated training at 28 Ministry of Health sites. As was the custom, CTR supported training courses and research projects in Ukraine.<sup>97</sup> In Russia, the CTR program had supported a series of programs since 1997 with Russian Biological Institutes. During contemporary years, the program worked at three institutes, Pokrov, Kazan and Vladimir, to design and construct upgrades in the laboratories' biological safety and security systems. During 2012, all three projects were completed. CTR program managers supported two research projects and the scientists presenting the research at international conferences.<sup>98</sup> However, further engagement with Russia awaited renegotiation of the two nation's umbrella agreement.

### **Nunn-Lugar program reaches 20 years, President Obama honors visionaries**

When comprehensive national security programs, like Nunn-Lugar Cooperative Threat Reduction, reach anniversaries it is time to consider their long records. From 1992, when Senators Nunn and Lugar succeeded in persuading Congress to enact the initial appropriation, through 2012, the scorecard below shows reductions in the former Soviet Union nations' massive arsenals of inherited nuclear and chemical weapons. Not shown in the chart are new nations joining existing arms control treaties, renouncing nuclear weapons, or signing nuclear nonproliferation treaties. Nor does the scorecard reveal the difficult issues negotiated and resolved by national presidents, defense ministers, military commanders, and policy and program managers as they established rules,

Table 11-3. Nunn-Lugar CTR Scorecard, 2012<sup>100</sup>

Former Soviet Union nations	Total Inherited	Total Eliminations, 2012
Warheads deactivated	13,300	7,601
ICBMs Destroyed	1,473	792
ICBM Silos Eliminated	831	498
ICBM Mobile Launchers Destroyed	442	182
Bombers Eliminated	233	155
Nuclear ASMs Eliminated	906	906
SLBM Launchers Eliminated (Submarines)	728	492
SLBMs Eliminated (Submarine missiles)	936	674
SSBNs Destroyed (Submarines)	48	33
Nuclear Test Tunnels/Sealed	194	194
Declared CW Agents Destroyed (Metric Tons)	39,986	3,512
Nuclear Weapons Train Shipments		596
Nuclear Weapons Storage Site Security Upgrades		24

Source: Report, CTR Policy Office, DOD, "Cooperative Threat Reduction Annual Report to Congress Fiscal Year 2014," pp. 3-5, 48-49.

procedures, and restrictions needed to carry out the long running, massive international assistance programs.

From 1992 to 2012, the CTR program spent a total of \$8.22 billion in obligation authority.<sup>99</sup> Senator Nunn supported the program strongly, and after he retired in 1996, Senator Lugar guided the appropriations through Congress every year. Lugar and a few other senators traveled each year to the project sites, located in remote areas across the region. Not shown in the chart were the thousands of trips and meetings by CTR policy and program managers at the project sites. In FY2012, for example, Defense Department managers and teams made 359 trips. Not revealed were the dozens of American contractors and hundreds of national subcontractors working on the multi-year elimination and security projects. However, the CTR scorecard does explain the record of former Soviet Union nations in deactivating warheads, eliminating strategic weapons, and destroying chemical weapons from 1992 -2012.

This scorecard does not explain the expansion of the CTR program's biological engagement programs in recent years into Afghanistan, Pakistan, Africa, and Southeast Asia. Nor

does it reflect the cooperation on destruction of chemical weapons with Albania and Libya.

To commemorate the 20<sup>th</sup> anniversary of the Nunn-Lugar CTR Program, the Department of Defense honored Senators Sam Nunn and Richard Lugar at a conference at the National Defense University in early December 2012.<sup>101</sup> Secretary of Defense Leon Panetta presented them with the department's highest civilian honor, the Distinguished Public Service Award. Panetta praised "their dedication, their leadership, and their efforts to ensure that we do everything we can to control the spread of weapons of mass destruction ..."<sup>102</sup> Their vision had been global, cooperative and engaged. When Ashton Carter, Deputy Secretary of Defense, spoke, he remembered the end of the Cold War, "As the Soviet Union disintegrated, [Nunn and Lugar] realized before anyone else that the danger of a Soviet Union attack was being replaced by a new and unprecedented danger: the possibility that its nuclear arsenal might fall into entirely new and unaccompanied hands – instantaneous proliferation on a massive scale..."<sup>103</sup> From that point, they and others, worked with Russian leaders reducing and securing nuclear weapons



Department of Defense

Senator Richard G. Lugar, Secretary of Defense Leon Panetta and Senator Sam A. Nunn (l.-r.) at the commemoration of the 20th anniversary of the Nunn-Lugar CTR Program, December 2012

and materials using all manner of Nunn-Lugar programs. Carter explained that Nunn-Lugar assistance persuaded Ukraine, Kazakhstan and Belarus to become denuclearized and to sign and ratify the Treaty of Nonproliferation of Nuclear Weapons. In past decade, Carter praised Nunn and Lugar for encouraging congressional and defense leaders to use the CTR program in new ways to meet threats from terrorist organizations. "CTR will forever be a part of human governance," he concluded, "because we can never forget what we know about these destructive weapons, and it will forever be associated with two names: Nunn and Lugar."<sup>104</sup> Then, Secretary Panetta introduced a special guest, President Obama.

"I wanted to just come by," President Obama began, "and join you in marking the 20<sup>th</sup> anniversary of one of the country's smartest and most successful national security programs: Nunn-Lugar."<sup>105</sup> The President looked out across the auditorium at Ashton Carter, Laura Holgate, Rose Gottemoeller, Andrew Weber, Jim Reid, Susan Koch, Jed Royal,

Kenneth Myers, Paul McNelly, Ronnie Faircloth, Elizabeth George, and many, many others who had developed the CTR



Department of Defense

President Obama (r.) praises Senators Nunn and Lugar for their key roles in the success of Nunn-Lugar CTR program, December 2012

program, and he explained “people in this room conceived it ... built it ... sustained it.”<sup>106</sup>

But, President Obama insisted that no one had done more than the “two visionaries,” Nunn and Lugar. He praised Nunn’s work in creating a world without nuclear weapons, endorsing nuclear treaties, rallying world leaders to secure nuclear materials, and strengthening the global nonproliferation regime. Then he recounted how as a junior senator, he had joined Senator Lugar on a long trip to Russia, Ukraine, and Azerbaijan, examining assistance programs. Local workers were disassembling weapons in dusty factories, weapons junkyards, and old nuclear weapons storage sites. It was primitive, dangerous work, but it was being done. At that point, Obama said he concluded: “This is one of our most important national security programs. And it’s a perfect example of the kind of partnerships that we need, working together to meet challenges that no nation can address on its own.”<sup>107</sup>

At one point, President Obama summarized all his major weapons of mass destruction policies, together. From speeches in Prague, comments at the Nuclear Security Summits, the signing the New START Treaty, and remarks on securing nuclear materials, the President said all, “strengthen the Nuclear Non-Proliferation Treaty and prevent the spread of the world’s most deadly weapons.”<sup>108</sup> That’s why, the President asserted, his administration had worked over the past four year to not only sustain the Nunn-Lugar program, but to strengthen and expand it. He mentioned new programs in recent years to destroy chemical weapons in Africa and new projects to prevent the spread of deadly diseases and bioterrorism in Asia and Africa. Finally, President Obama concluded with remarks that resonated: “It’s painstaking work. It rarely makes the headlines. But I want each of you to know... that the work you do is absolutely vital to our national security and to our global security.”<sup>109</sup>

## Endnotes

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<sup>4</sup> “Remarks by President Obama,” Hradcany Square, Prague, Czech Republic, April 5, 2009, The White House, Office of the Press Secretary.

<sup>5</sup> See, “Remarks by the President at the New Economic School Graduation,” Moscow, Russia, July 7, 2009, The White House, Office of the Press Secretary.

<sup>6</sup> Center for Biosecurity, Speakers biography, Laura Holgate, October 6, 2009, Washington, D.C. [http://www.upmc-biosecurity.org/website/events/2009\\_prevention\\_bio/speakers/holgate](http://www.upmc-biosecurity.org/website/events/2009_prevention_bio/speakers/holgate)

<sup>7</sup> Ashton B. Carter, Deputy Secretary of Defense, Defense Government Biography, <http://www.defense.gov/bios/biographydetail>.

<sup>8</sup> Report, “Review Panel on Future Directions for the Defense Threat Reduction Agency Missions and Capabilities to Combat Weapons of Mass Destruction,” March 2008.

<sup>9</sup> Biography Andrew Weber, Center for Biosecurity, UPMC, April 2010, <http://www.umpc-biosecurity.org/website/events/2010GlobalHealth/speakers/weber.html>

<sup>10</sup> Directors Biography, Kenneth A. Myers, Director, Defense Threat Reduction Agency and USSTARTCOM Center for Combating WMD. <http://www.dtra.mil/About/DirectorsBio.aspx>

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<sup>12</sup> National Research Council, “The Biological Threat Reduction Program of the Department of Defense: From Foreign Assistance to Sustainable Partnerships” (2007), p 3.

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<sup>18</sup> These trip reports were published electronically by Senator Lugar’s Office. See Nunn-Lugar Report, Russia, Ukraine, Albania, August 2007. Reports for 2007 through 2010 at <http://lugar.senate.gov/nunnlugar/reports/> accessed 22 December 2011.

<sup>19</sup> Press Release, Senator Richard Lugar, “Lugar legislation included in final defense authorization bill,” 15 October 2009.

<sup>20</sup> Interview, Nikolai I. Shumkov, Director (retired), Department of Missile Technologies, Federal Space Agency, and Director,

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<sup>21</sup> Report, CTR Directorate, DTRA, "Nunn-Lugar, Cooperative Threat Reduction Program: Russia," August 2000.

<sup>22</sup> Report, CTR Directorate, DTRA, "Nunn-Lugar, Cooperative Threat Reduction Program: Russia," August 2000. See also Federation of American Scientists, Fact Sheet, Weapons of Mass Destruction, "RT-23/SS-24 Scalpel," at <http://www.fas.org/nuke/guide/russia/icbm/rt-23.htm> accessed on 30 November 2011. See Michael Jasinski and Nikolai Sokov, "Russia: Strategic Rocket Forces Overview," Nuclear Threat Initiative, April 2001, at <http://www.nti.org/db/nisprofs/russia/weapons/icbms/srfovr.htm> accessed on 30 November 2011.

<sup>23</sup> Report, CTR Directorate, DTRA, "Nunn-Lugar, Cooperative Threat Reduction Program: Russia," August 2000. DoD, CTR Directorate, "Russian Country Book: Program Briefing," 23 March 2005.

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<sup>26</sup> Memorandum for Record, "Global Nuclear Security (GNS) Program and Strategic Offensive Arms Elimination (SOAE) Program Executive Review/Implementation Program Management Review Between DoD and Rosatom," June 6, 2012; Memorandum of Record, "Global Nuclear Security Executive Review/IPMR Meeting with 12<sup>th</sup> GUMO," November, 17 2011, Moscow, Russia; Memorandum for Record, "DoD/Rosatom Executive Review Global Nuclear Security," May 25, 2011.

<sup>27</sup> J3CT Directorate, DTRA, Fact Sheet, SS-25 System Elimination Project, <http://dtra1/j3-7/j-3ct/Fact%Sheet/forms/AllItems.aspx>

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<sup>30</sup> J3CT Directorate, DTRA, Fact Sheet, Liquid Propellant (LP) Intercontinental Ballistic Missile (ICBM) Elimination Project, <http://dtra1/j3-7/j-3ct/Fact%Sheet/forms/AllItems.aspx>

<sup>31</sup> J3CT Directorate, DTRA, Briefing, Chas Marquez, Program Manager, "Strategic Offensive Arms Elimination and Strategic Nuclear Arms Elimination", no date, @ February 2011.

<sup>32</sup> J3CT Directorate, DTRA, Fact Sheet, Liquid Propellant (LP) Submarine-Launched Ballistic Missile (SLBM) Elimination Project, <http://dtra1/j3-7/j-3ct/Fact%Sheet/forms/AllItems.aspx>

<sup>33</sup> Ibid.

<sup>34</sup> Memorandum of Record, "Global Nuclear Security Executive Review/IPMR Meeting with 12<sup>th</sup> GUMO," 17 November 2011, Moscow, Russia. Essentially, these were the minutes of the meeting. Program and projects were reviewed, but the questions and answers covered policy issues as well.

<sup>35</sup> J3CT Directorate, DTRA, Fact Sheet, "12<sup>th</sup> Main Directorate," <http://dtra1/j3-7/j3ct/ctn/CTN%20Learning%20Center/12th%20Main%20Directorate.aspx>

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<sup>37</sup> Joint Statement by President George W. Bush and President Vladimir V. Putin on Nuclear Cooperation, Bratislava, 24 February 2005. at [http://moscow.usembassy.gov/transcripts\\_photo\\_bio/joint-statement-by-president-george-w.-bush-and-president-vladimir-v.-putin-on-nuclear-security-cooperation-bratislava-february-24-2005](http://moscow.usembassy.gov/transcripts_photo_bio/joint-statement-by-president-george-w.-bush-and-president-vladimir-v.-putin-on-nuclear-security-cooperation-bratislava-february-24-2005) accessed on 22 December 2011. Interview, Hunter Lutinski, Program Manager, Nuclear Weapons Safety and Security Program, DTRA, with Joseph P. Harahan, Historian, DTRA, 20 May 2009; U.S. Department of Energy, Press Release, "U.S. and Russia Complete Nuclear Security Upgrades from Bratislava," 23 December 2008.

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<sup>43</sup> J3CT Directorate, DTRA, Fact Sheet, "Unified Operations Center," December 31, 2012,, <http://dtra1/j3-7/j-3ct/Fact%Sheet/forms/AllItems.aspx>

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<sup>98</sup> Ibid, pp. 26-27.

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## GLOSSARY

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AMEC	Arctic Military Environmental Cooperation	ICBM	Intercontinental Ballistic Missile
ABM	Anti-Ballistic Missile	INF	Intermediate Nuclear Forces Treaty
AICMS	Automated Inventory Control and Management System	ISTC	International Science and Technology Center
		IG	Inspector General
BTRP	Biological Threat Reduction Program	KGB	Committee for State Security of the Soviet Union
BWC	Biological Weapons Convention		
BWPP	Biological Weapons Proliferation Prevention		
		MPC&A	Material Protection, Controls and Accounting
CFE	Conventional Armed Forces in Europe Treaty	MFA	Ministry of Foreign Affairs
CLS	CTR Logistical Support	MinAtom	Ministry of Atomic Energy
CIS	Commonwealth of Independent States	MOD	Ministry of Defense
CSCE	Commission for Security and Cooperation in Europe	MOU	Memorandum of Understanding
CTBT	Comprehensive Test Ban Treaty	NSC	National Security Council
CTR	Cooperative Threat Reduction Program	NPT	Non-Proliferation Treaty
CTRIC	CTR Integrating Contractor	NATO	North Atlantic Treaty Organization
CW	Chemical Weapons		
CWC	Chemical Weapons Convention	OSD	Office of the Secretary of Defense
		OSIA	On-Site Inspection Agency
DOD	Department of Defense	RASA	Russian Aviation and Space Agency
DOE	Department of Energy		
DOS	Department of State	SSD	Safe, Secure, Dismantlement Talks
DNA	Defense Nuclear Agency	SATC	Security Assessment Training Center
DTRA	Defense Threat Reduction Agency	START I	Strategic Arms Reduction Treaty I
		START II	Strategic Arms Reduction Treaty II
FAR	Federal Acquisition Regulations	SNDV	Strategic Nuclear Delivery Vehicles
FMSF	Fissile Materials Storage Facility	SOAE	Strategic Offensive Arms Elimination
FY	Fiscal Year	SRF	Strategic Rocket Forces
GAO	Government Accounting Office	SSBN	Ballistic Missile Submarine
		SLBM	Submarine Launched Ballistic Missile
HEU	Highly Enriched Uranium	TADR	Threat Agent Detection and Response Program
IAEA	International Atomic Energy Agency		

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TNT	Trinitrotoluene: an explosive
USSR	Union of Soviet Socialist Republics
VAT	Value Added Tax
WMD	Weapons of Mass Destruction

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# WITH **COURAGE** AND **PERSISTENCE**

Eliminating and Securing Weapons of Mass Destruction with the  
Nunn-Lugar Cooperative Threat Reduction Programs

This book recounts the history of one of America's most important national security programs and celebrates the work of the many public servants who have made it a success. The Nunn-Lugar Cooperative Threat Reduction Program, which became law in 1991, was aimed at providing American funds and technical expertise to help safeguard and dismantle vulnerable stockpiles of nuclear, chemical and biological weapons and materials in the former Soviet Union. Although much of this original mission has been completed, the capabilities of the Nunn-Lugar Program and the Defense Threat Reduction Agency (DTRA), which implements it, have expanded to meet global proliferation threats and much more important work remains to be done. Nunn-Lugar and DTRA will continue to be vital components of the U.S. national security strategy.



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