

THE FATE OF RUSSIAN NUCLEAR CITIES

I. The Issue

At the height of the Cold War, the Soviet Union employed as many as 600,000 scientists, engineers, researchers, and technicians located in ten secret, highly restricted “nuclear cities.”¹ For over 50 years, these ten cities were closed to the outside world as they developed and built nuclear weapons for the Soviet nuclear arsenal. With the end of the Cold War, Russia concluded that it could no longer financially support its vastly oversized nuclear weapons complex and decided to reduce staff size significantly by the year 2005.²

Today, formerly well-paid nuclear specialists are paid meager wages that are often delayed for several months, and the standard of living in the closed cities has dropped significantly. With up to 150,000 individuals likely to be affected by the reductions, there is the serious risk that the scientists and engineers who had worked in these nuclear cities could be persuaded to work for terrorist groups or “rogue” states.³

The United States and Russian nuclear complexes, while comparable in size, differ greatly in the manner in which they are maintained. The United States has a program of maintaining a stockpile of warheads with a relatively long shelf life, while the Russian nuclear complex, because of manufacturing and technological problems that limit the lifetime of Russian warheads to 10-15 years, relies on the continual production of new nuclear warheads.⁴

Although the United States and Russia plan to reduce their deployed strategic nuclear weapons under the Strategic Offensive Reductions Treaty (SORT) (also known as the Moscow Treaty), some fear that Russia’s warhead production capability gives it a significant “breakout potential”—the ability to begin rapidly producing new nuclear weapons. Consequently, they believe that the United States must maintain a large stockpile of non-deployed warheads as an emergency backup. On the other hand, Russia is highly concerned about the large U.S. non-deployed nuclear stockpile.⁵

Concerns on the part of both countries about the “breakout potential” of the other threaten to hinder further reducing the nuclear threat inherited from the Cold War.⁶ Additionally, the closing of Russian nuclear facilities in order to reduce or end Russian nuclear warhead production raises the problem of how to reintegrate into the mainstream the scientists and engineers who were once employed in weapons production.

Both problems—how to re-engage unemployed scientists and workers after warhead research and production facilities have been reduced and how to reduce and possibly end Russian warhead production—have the potential to pose imminent threats to U.S. national security and must be addressed expeditiously.

In 1998, an agreement between the United States and Russia established the Nuclear Cities Initiative (NCI). This cooperative program, which is jointly managed by the U.S. Department of Energy (DOE) and the Russian Ministry of Atomic Energy (Minatom), works to:

- Provide civilian non-weapons related employment opportunities for former weapons scientists;
- Promote Russian economic development and diversification by sharing U.S. expertise in areas such as diversification strategies, venture capital, market analysis, and marketing of products and services;
- Support and enhance non-weapons related expertise by developing entrepreneurial skills; and
- Assist in creating the conditions necessary for economic development and conversion in the nuclear cities.⁷

To date, the NCI has converted six buildings totaling 550,000 sq. ft. to civilian use at the Avangard Electrochemical Plant, employed the equivalent of 370 full-time personnel in non-military work, created two International Development Centers, two Open Computing Centers, and two Nonproliferation Centers, and attracted nine commercial firms to invest in the cities, including software, information technology, medical, electronic and automotive firms.⁸

The Department of Energy also operates the Initiatives for Proliferation Prevention (IPP) program. The IPP identifies and develops non-military applications for defense technologies and creates long-term, non-weapons-related jobs for former Soviet weapons scientists and engineers in the commercial marketplace. As of June 2000, this program had approved 511 projects, engaging over 8,000 scientists, engineers, and other staff at more than 170 institutes in Russia and the former Soviet states (FSU). Seventy percent of the projects have been in the nuclear sector and 30 percent in the chemical and biological sectors.⁹

In the Energy and Water Development Appropriations Act for FY 2002 (Public Law 107-66), the NCI and IPP were combined into a single line item under the heading Russian Transitions Initiatives (RTI).

II. Recent Legislation

- The Energy and Water Development Appropriations Act for FY 2002 (H.R.2311, which became Public Law 107-66) combined NCI and IPP funding under the Russian Transition Initiatives (RTI) budget item and provided \$41 million for the programs.
- The National Defense Authorization Act for FY 2000 (S. 159, which became Public Law 106-65) allowed no more than 35 percent of IPP funds to be expended by the

Department of Energy national laboratories to carry out or provide oversight of any activities.

III. Obstacles

- The NCI program, though applicable to all 10 nuclear cities, is currently restricted to the three pilot cities of Sarov, Snezhinsk, and Zheleznogorsk.
- Restricted access to, and the remote locations of, the closed cities continue to be barriers to the success of the transition programs.¹⁰
- Legislative support for the NCI and IPP programs has been weak and restrictions placed on the programs have reduced their effectiveness
- Inadequate administration of the NCI and poor project selection has led to much of the funding being spent in the United States.¹¹

IV. Q & A

Q. How does the Nuclear Cities Initiative (NCI) differ from the Initiatives for Proliferation Prevention (IPP)?

A. IPP engages former Soviet weapon scientists at institutes across the states of the former Soviet Union (FSU) in applied research projects having high commercial potential. These scientists continue to work at institutes both inside and outside the Russian nuclear cities, and comprise former biological and chemical weapons researchers and missile development experts in addition to nuclear scientists. NCI, on the other hand, seeks to reduce the size of the weapons complex through economic diversification. NCI has converted machine shops and processing facilities from weapons work to civilian use, reduced the footprint of one major Russian nuclear complex, and re-directed high-performance U.S. origin computers from weapons-design work to civilian activities. This is very different from IPP's focus on jobs creation within the institutes and technology commercialization. Thanks to a Government-to-Government Agreement, NCI pays no taxes or customs duties. IPP makes arrangements to send its payments through other engagement programs in order to avoid such additional costs.¹²

Q. What are other related U.S. Government nonproliferation programs?

A. In addition to NCI and IPP, two other so-called "brain drain" or "expertise" programs are the International Science and Technology Center (ISTC), and the U.S. Civilian Research and Development Fund (CRDF). ISTC, a multilateral nonprofit organization with funding from the United States, Japan, and the European Union, provides research and development grants and training to Russian weapons scientists working in non-defense fields. CRDF is a nonprofit organization that promotes scientific and technical collaboration between the United States and the states of the former Soviet Union.¹³

Q. In what ways does the U.S. Government mitigate the risks of doing business in the closed cities?

A. The legal framework provided by the NCI Government-to-Government Agreement and the cooperation between MinAtom and the Department of Energy's National Nuclear Security Agency provide a measure of assurance and stability to U.S.

industry in the closed cities. NCI conducts export control reviews and ensures that due diligence is carried out on all proposals. The Russian Government offers tax incentives in the closed cities that make them attractive for local enterprises and their partners.¹⁴

Q. Are there processes in place to ensure that projects approved by NCI have the potential of becoming commercially viable?

A. NCI has formal processes in place for review of the projects it funds, including review for commercial viability. This review process involves interagency participation as well as outside contractors with the background and expertise to do commercial reviews of Russian projects. In addition to assessment for commercial viability for commercial and technology projects, projects are reviewed to ensure that there is no duplication between programs, no export control issues, and no military dual use concerns.¹⁵

V. Talking Points

- The lack of opportunity for Russian nuclear scientist and workers to obtain sustainable civilian jobs creates the risk that the knowledge and expertise of these scientists and workers will be exported to the highest bidder.
- By providing financial and technological assistance to aid in the closing of Russian nuclear cities, U.S. national security is strengthened by reducing the size of the Russian nuclear complex and securing nuclear expertise and materials against proliferation.
- To increase the effectiveness of the NCI and IPP, a broader set of tools should be employed, including: exploring retirement incentives and pension subsidies, as well as bolstering analytical research on the problems faced in building down the Russian WMD complex.¹⁶

VI. Factoids

- The Nuclear Cities Initiative is responsible for the transitioning of 370 full-time personnel out of the weapons complex.¹⁷
- The Initiatives for Proliferation Prevention (IPP) has engaged over 8,000 scientists, engineers and other staff at more than 170 institutes in Russia and the former Soviet Union (FSU).
- The Nuclear Cities Initiative (NCI) has opened two Open Computing Centers (OCC)—in Sarov and Snezhinsk—to provide alternative, non-defense employment for VNIIEF programmers and software developers through work with Western and Russian commercial clients.
- Russia’s nuclear weapons scientists and technicians are sought after by terrorists, yet Russia is no longer able to provide for all of its weapons scientists and technicians. Consider the following statistics:
 - More than 62 percent of employees earn less than \$50 per month,
 - 58 percent are forced to take second jobs to earn money,

- o 89 percent report a decline in living conditions since 1992, and
- o 6 percent express interest in moving “any place at all.”¹⁸

VII. Applicable Treaties, Legislation, and Other International Agreements

- Agreement Between the Government of the United States of America and the Government of the Russian Federation on the Nuclear Cities Initiative (NCI) signed in September 22, 1998.¹⁹

¹ Mariya Kalugina, “Amerikantsy platyat za konversiyu ‘atomnykh gorodov’ Rossii,” *Izvestiya* online edition, September 24, 1998, accessed at: <http://www.online.ru/products/.../24-Sep-98/1.rhtml>, cited in Elena Sokova, “Russia: The Nuclear Cities Initiative,” April 19, 2002, accessed at: <http://www.nti.org/db/nisprofs/russia/forasst/doe/closcity.htm>.

² U.S. Department of Energy, Office of Nonproliferation and National Security, “Nuclear Cities Initiative: Program Strategy,” August 1999, accessed at: <http://www.ransac.org/new-web-site/primary/transform/nci/ncibook.html>.

³ Elena Sokova, “Russia: The Nuclear Cities Initiative,” April 19, 2002, accessed at: <http://www.nti.org/db/nisprofs/russia/forasst/doe/closcity.htm>.

⁴ According to General Evgeni Maslin, former head of the 12th Main Directorate of the Russian Ministry of Defense, “[A]pproximately after ten years in storage, it [high explosives necessary for a nuclear weapon to function] starts to crack and change its chemical and physical properties...” O. Falichev, “Who Keeps the Keys from the Nuclear Arsenal,” *Krasnaya Zvezda*, December 26, 1993. The problem of corrosion and swelling of nuclear components were mentioned in Stenographic Records of the Parliamentary Hearings, “Safety and Security Problems at Radiation-Hazardous Facilities,” November 25, 1996, Moscow (see *Yaderny Control*, October-November 1997, pp. 7-11), cited in Oleg Bukharin, “A Breakdown of Breakout: US and Russian Warhead Production Capabilities,” October 2002, accessed at: http://www.armscontrol.org/act/2002_10/bukharinoct02.asp.

⁵ Oleg Bukharin, “A Breakdown of Breakout: US and Russian Warhead Production Capabilities,” October 2002, accessed at: http://www.armscontrol.org/act/2002_10/bukharinoct02.asp.

⁶ *Ibid.*

⁷ U.S. Department of Energy and Russian Ministry of Atomic Energy, “Agreement between the Government of the United States of America and the Government of the Russian Federation on the Nuclear Cities Initiative,” September 22, 1998, accessed at: <http://www.ransac.org/new-web-site/related/agree/bilat/initiativeagreement.html>.

⁸ U.S. Department of Energy, “NCI Accomplishments,” accessed at: http://www.nn.doe.gov/nci/about_accomp.shtml.

⁹ Nuclear Threat Initiative, “Russia: Initiatives for Proliferation Prevention,” December 20, 2002, accessed at <http://www.nti.org/db/nisprofs/russia/forasst/doe/ipp.htm>.

¹⁰ Elena Sokova, “Russia: The Nuclear Cities Initiative,” *op cit.*

¹¹ *Ibid.*

¹² U.S. Department of Energy, “NCI Frequently Asked Questions,” accessed at: http://www.nn.doe.gov/nci/about_faq.shtml.

¹³ *Ibid.*

¹⁴ *Ibid.*

¹⁵ *Ibid.*

¹⁶ Obstacles to the effective functioning of efforts to deal with Russian nuclear cities and to find peaceful employment for former weapons scientists, engineers, and other staff, and the steps to overcome them are discussed in both: “Reshaping U.S.-Russian Threat Reduction: new Approaches for the Second Decade,” Findings Developed by a Joint Work Group and Published by the Russian-American Nuclear Security Advisory Council and the Carnegie Endowment for International Peace, 14 November 2002, accessed at:

http://www.ceip.org/files/Publications/ransac_report.asp?from+pubdate/; and *Protecting Against the Spread of Nuclear, Biological and Chemical Weapons*, Robert J Einhorn and Michèle A. Flournoy, project directors, CSIS Reports, January 2003, accessed at: http://www.csis.org/pubs/2003_protecting.htm.

¹⁷ U.S. Department of Energy, “NCI Accomplishments,” *op cit.*

¹⁸ *Russia’s Nuclear and Missile Complex: The Human Factor Proliferation 2001*, report from the Carnegie Endowment for International Peace, accessed at: <http://www.nti.org/db/nisprofs/russia/forasst/doe/closcity.htm>.

¹⁹ U.S. Department of Energy and Russian Ministry of Atomic Energy, “Agreement between the Government of the United States of America and the Government of the Russian Federation on the Nuclear Cities Initiative,” *op cit.*