

Testimony

of

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Mr. Chairman, we welcome the opportunity to appear before you today to address the pressing question of what should be done to reduce the nuclear proliferation risk stemming from the breakup of the Soviet Union. There are two key nonproliferation tasks associated with the disintegration of tight central government authority and continuing economic decline in the former Soviet Union (FSU):

- we must seek to establish continuity of knowledge regarding the location and status of nuclear warheads and fissile material;
- we need to foster the swift implementation of additional safeguards against the spread of nuclear weapon design information and materials production technology possessed by several thousand skilled professionals, primarily in Russia.

To ensure adequate accounting and control -- especially over the long term -- of an estimated 27,000 warheads and 700 - 1000 tons of weapons-useable plutonium and highly-enriched uranium metal in the stockpile of the FSU, a verification process should be established immediately to provide a seamless continuity of knowledge regarding the chain of custody, current status, and ultimate disposition of warheads and fissile material. From the nonproliferation perspective, it will avail the world little for the Commonwealth of Independent States and the United States to each unilaterally "destroy" 15-20,000 warheads if other countries --including the sceptics in our own country -- are in a position to argue that residual uncertainties in the New World Order have supplanted the certain threat of mutual annihilation which marked the Cold War. Indeed, a failure to properly account for disposition of the vast excess of nuclear destructive power now being discarded by the former nuclear superpowers could actually make the proliferation problem worse, by increasing uncertainty worldwide about who does or does not have access to nuclear weapons materials and technology.

Such uncertainty may prove more than sufficient for additional governments to justify a nuclear option or even a substantial arsenal. At the very least, it creates a lofty floor for nuclear arms reductions below which, it will be argued, "we dare not go." In this environment, a "prudent" national security posture will demand a "hedge" against the possibility that the heirs to the Soviet arsenal did not do what some former leader said they would do. Dr. Strangelove's mine shaft gap will be back with a vengeance, only this time the mine shafts will be filled with warheads, and a whole new generation of professional pessimists will arise to make the case for nuclear preparedness.

Mr. Chairman, we need meaningful verification of nuclear warhead dismantlement, and we need it now, not five years from now, after the inevitable round of finger-pointing has already started over who should get the blame for losing track of several tons Soviet fissile material. One percent of the Soviet fissile material

inventory could be used to manufacture hundreds of nuclear weapons.

Second, to contain the migration of nuclear expertise, it is essential for the U.S. government to provide short-term funding of opportunities for nonweapons employment of former Soviet weapons experts, to help them redirect their technical skills into less sensitive areas. This would help contain the proliferation threat in two ways:

- first, providing immediate prospects for meaningful technical employment outside of weapons design and production can avert the immediate threat of a large exodus of scientists while defusing the economic pressures to participate in dubious schemes for commercialization of the weapons complex;
- second, providing technical training and job opportunities in areas such as environmental cleanup, energy efficiency, microelectronics, software development, teaching, nuclear safety analysis and inspection, and basic research, the economic prospects and quality of life for all Russians can be improved, leading to a reduced risk of brain drain over the longer term.

In the face of official U.S. hostility toward verifiable controls on nuclear warhead elimination and fissile materials, virtually the entire U.S.-Soviet dialogue on these questions over the last decade has been carried out at the unofficial level. In 1987 the Federation of American Scientists (FAS) and Soviet Academy scientists began a five year project to examine the verification of deep reductions in nuclear weapons, including methods for verifying a fissile material production cutoff and warhead destruction. This process culminated in October-December 1991 in a higher level but still unofficial exchange involving, on the U.S. side, NRDC, FAS, university scientists, and scientists from Los Alamos, Livermore, and Argonne national laboratories; and on the Soviet side, the Soviet and Russian Foreign Ministries, the scientific directors of the two Soviet weapons laboratories, senior officials from the Ministry of Atomic Power and Industry, and senior officials from the Foreign Ministry, Parliament and Defense Ministry of Ukraine.

Until mid-December, 1991, the Department of Energy consistently sought to block the attendance of national laboratory experts at our joint workshops with the Soviet side, on the grounds that the issues under discussion at such meetings were not part of the approved arms control agenda of the Bush Administration. With the final collapse of the all Union government in mid December, the official attitude of the U.S. government apparently changed, because DOE suddenly permitted two weapons scientists to join our delegation to the Ukraine.

While we welcome this shift in policy, the fact remains that by obstructing the freedom of University of California scientists to

explore technical aspects of arms control jointly with their SOviet colleagues and nongovernment U.S. scientists, the Bush Adminsitration and the DOE were not nearly as well prepared as they could have been for the arms reduction and nonproliferation challenges of the post Cold-War era.

At our most recent meeting in Moscow and Kiev in mid-December, 1991 we sought to fulfill two objectives: one was to understand the positions of the various parties involved in the warhead elimination process in the new Confederation of Independent State; the other was to jump start a verified warhead inventory control program by encouraging Russian and Ukrainian authorities to begin the program between themselves with the hope that the U.S. would join the program at a later date. While we succeeded in the first objective, we were stymied in our efforts to initiate verified warhead inventory control of the weapons being withdrawn from Ukraine by officials of the former Union Ministry of Defense who insisted on U.S. reciprocity before undertaking such a program.

It was made clear to us during our visit that Russian and Ukrainian arms control and nonproliferation specialists and cognizant military professionals want more verification of the warhead dismantlement process. If a reasonable proposal for verification were presented by the Bush Administration, Russian officials have assured us that such a proposal would be accepted.

Some of the reform-minded leaders of the new Russian foreign policy establishment explained that they personally would have no problem with Russia unilaterally initiating verification arrangements with the other Republics without prior agreement on reciprocity from the U.S. side. But they noted they were now living in a pluralistic society, where conservative elements hold powerful positions. They feared that unilateral Russian implementation of warhead verification measures would provide an opening for "right-wingers" to accuse the democratic reform forces of selling Russian security down the river. They also observed that the Reagan-Bush Administrations had repeatedly informed the Soviet side during the INF and START negotiations of its lack of interest in pursuing verification arrangements for nuclear warhead elimination and fissile material control.

In the final analysis, if we want to contain the proliferation threat, and if we want to get to very deep reductions in nuclear weapons, such that all nuclear weapons states are bound by the same tight set of controls, then it is absolutely essential to move forward now with a multilateral verification program involving the Russian Federation and the three new states -- Ukraine, Belarus, and Kazakhstan -- seeking elimination of nuclear weapons from their territory.

We also should be in the forefront of an international campaign to increase the budget and capabilities of the International Atomic Energy Agency (IAEA) for two reasons: so

that it can effectively take on the task of safeguarding the reactors in the new Republics that aspire to non-weapons state status under the Nonproliferation Treaty, and; so that it can safeguard the hundreds of tons of fissile material that will be removed from weapons over the next decade.

There is a range of specific actions we can undertake with the Russians and other nuclear weapon states to reduce the risks of proliferation and enhance the prospects for deeper cuts:

- The first is a data exchange, including the total number of warheads of each type, and the total inventory by weight of plutonium and highly-enriched uranium metal in and outside of warheads;
- the second step is an exchange of serial numbers and locations of warheads, which would be updated every six months;
- the next step would be disclose the fraction of the total fissile material inventory in weapons accounted for by specific classes of warheads scheduled for elimination, e.g. "artillery shells" "short range tactical missile warheads";
- "intrinsic fingerprint" tags of individual warheads, or their sealed canisters, should be made for all warheads scheduled for dismantlement, a task which, in the case of warheads now being removed from Ukraine, could be accomplished in a matter of weeks. The warhead tagging can be performed before or after the weapons are transported back to Russia.
- the U.S. government should initiate technical discussions of the dismantlement process itself. In our informal joint research program with our Soviet colleagues, we worked out procedures for conducting nonintrusive verification of warhead dismantlement.

Up to now, the Bush Administration has sought to shield U.S. nuclear establishment from rigorous inspection by adopting a posture of benign neglect toward the disposition of the Former Soviet Union's nuclear stockpile. Today there is no shortage of scary scenarios about how the breakup of the Soviet Union will ultimately play out. But need not resort to speculation in order to find the motivation for undertaking swift and effective action. Let us just take a hard look at the current situation. The previous legal authority and enforcement structure for regulating nuclear exports in the FSU has totally disintegrated. There are no legally binding nuclear export requirements in the new Republics, and no cadre of trained inspectors policing the borders, ports, and airports for illegitimate nuclear exports. Export control is now largely a matter of self-restraint by those directly in charge of the warhead and fissile material production complex. But this self-restraint must compete with the new

freewheeling entrepreneurial environment, in which powerful Ministry officials are spinning off private enterprises by appropriating former communist party assets and the bank accounts and property of former state owned enterprises. They are looking for way to market every aspect of the formerly secret complex, including nuclear explosions.

Think about how different the risks would be today if the Bush administration had heeded the congressional call back in 1989 for a verified fissile material cutoff and verified warhead dismantlement. Today there would be hundreds of U.S. and international inspectors all over the republics of the FSU, coping with this very problem. Soviet plutonium production reactors would be shut down; tritium production reactors would be closed or operating under bilateral safeguards; fissile material components of weapons retired without replacement would be stored under bilateral safeguards, and all civil reactors, nuclear fuel cycle facilities, and civil stocks of fissile material would be under international safeguards.

The opportunity is still there, not only in the former Soviet Union, but in every declared and undeclared nuclear weapon state. If the United States government truly wants to halt the proliferation of nuclear arsenals and dramatically reduce the global inventory of nuclear weapons and fissile materials far below the still high levels called for in the President's state of the Union address, then it should recognize that the technical and political path to achieving such a world has been opened by the denuclearization agenda of the new nations of Ukraine, Belarus, and Kazakhstan. What is still lacking is leadership with the wisdom and foresight to bring such a world into being. With respect to the second area of concern - preventing the migration of nuclear expertise from Russia to other countries - we are aware that the Administration is currently developing a plan to address with this problem. There are several good proposals which together could provide a wide range of alternative employment opportunities for Russian nuclear weapons experts. NRDC, working with the staff of the Russian Foreign Ministry, has established an administrative structure that can be used to

o establish a U.S. government-funded program (\$20 million/yr) to provide immediate employment for up to 7,000 nuclear weapons experts of the Former Soviet Union (FSU), almost all of whom live and work in Russia.

SUMMARY:

Working with the staff of the Russian Foreign Ministry, the Natural Resources Defense Council (NRDC) has in place an existing administrative structure that would permit rapid implementation of such a program with the necessary

oversight to ensure the funds were directed to the appropriate people for approved activities.

Funding: Tap a small portion (i.e. 5%) of the \$400 million authorized by Congress to be transferred from DoD at the President's discretion for expenditure in support of the objectives of the *Soviet Nuclear Threat Reduction Act (SNTRA) of 1991*. Possible follow-on funding for certain cooperative U.S.- Russian environmental projects could come from the Strategic Environmental Research Program (SERP) in DoD; cooperative arms control research and demonstration programs could ultimately be funded by State, DNA, the DOE Office of Arms Control or NSF. The annual cost of this program should decline as weapons experts are absorbed into a peacetime economy

Program Management and Oversight: On the U.S. side the program would be administered by the Natural Resources Defense Council (NRDC).¹ Transfers of funds would be approved by an expert group designated by USG.² In Moscow the program would be administered by a small program committee of Russians and Americans organized as a program of a new Russian non-governmental organization, the *Integration Foundation* (See Appendix for a list of personnel). The members of the committee and the program staff would be under the direction of Sergei Kortunov, one of the two vice presidents of *Integration* and head of new Department of Nonproliferation, Arms Exports, and Defense Industry Conversion of the Russian Foreign Ministry.

¹ An alternative would be a small consortium, e.g., NRDC and the University of California, which could serve as an acceptable channel for involvement of US weapons laboratory experts.

² Additional oversight could be provided by a larger blue-ribbon Advisory Committee on Nuclear Complex Conversion and Safeguards, including experts from academia, industry and government.

RATIONALE:

There is a strong economic incentive for Russian nuclear weapons experts either to emigrate or to sell their technical capabilities and/or restricted data to interested parties representing countries with poor nonproliferation credentials.³ The experts of greatest concern are those individuals whose skills have no civilian counterpart, which would include the weapon designers at the two weapons design laboratories, Arzamas-16 and Chelyabinsk-70. For modest cost these professionals, and by extension the nuclear design information they possess, can be kept in Russia by providing them with *near-term* opportunities for gainful work on a variety of environmental, energy, and other civilian tasks designed to improve the quality of life in Russia.

The objective would be to rapidly implement a cooperative U.S.-Soviet program to provide Soviet nuclear weapons program personnel with a range of non-weapons employment and/or retraining opportunities: e.g. opportunities for basic research; applied research in material and environmental sciences; environmental planning and cleanup; nuclear safety analysis and inspection; energy conservation; microelectronics and software development; and possible commercialization of marketable non-weapons innovations.

PROGRAM COST:

There are probably one or two thousand people in the FSU (almost all in Russia) with skills to design nuclear weapons, and perhaps another 3,000-5000 persons (also in Russia) involved in plutonium separation and uranium enrichment programs that have access to sensitive information on the design and operation of fissile material production plants. It is impossible to predict the future economic climate in Russia, and therefore impossible to gauge the cost of employing professionals in Russia. Assuming rather arbitrarily that a professional will be paid at an average rate of \$2000 (currently Rbls 300,000) per year, then 7000 nuclear experts production professionals could be employed for \$14 million.⁴ Administrative, travel, and expert consulting costs would be about \$5 million. Thus, a ballpark estimate of the total program cost should not be more than about \$20 million/year once the program is fully developed. Start-up cost during the first 8 months (February 1 - October 1, 1992) would be substantially less.

³ The current salary of a professional nuclear weapons expert in Russia is less than 1000 rubles per month. At the current (January 1992) exchange rate (100 rubles = \$1.00 (US)) these professionals are making less than \$10 per month.

⁴ The cost could vary substantially depending on the individual, place of business, state of the Russian economy, etc.

FUNDING SOURCES:

The program appears to fall within one of the three broad purposes already authorized by the *SNTRA*, namely "to establish verifiable safeguards against the proliferation of such weapons."⁵ This interpretation can obviously be checked with the principle congressional sponsors, whom we believe would support such a use of the funds. The *SNTRA* explicitly provides for DoD reimbursement of other departments and agencies, as directed by the President, for programs that are consonant with the purposes of the Act.

PROGRAM MANAGEMENT AND OVERSIGHT:

The management objective is to provide an efficient mechanism for approving projects and providing support for nuclear weapons experts, with control of the dispersal of the funds maintained by the American side and a few key people in the FSU.

The key player on the Russian side, Sergei Kortunov, has strong nonproliferation, demilitarization, and pro-democracy credentials. To prevent the program from becoming a casualty of re-organizations and power struggles within the ministry, the administration of the program on the Russian side should be through an independent non-government organization.

Kortunov is one of the founders of *Integration*, a self-governing independent organization that is being created to support military conversion activities.⁶ The president of *Integration* is Academician E. Fedosov, Director of the Research Center of Aviation Systems. Sergei Kortunov is one of the two vice presidents (See Appendix).

Integration will establish a program under Kortunov's direction, whose sole purpose is to administer the project proposed here. It would be staffed by people selected by Kortunov, NRDC, and USG, e.g., three Russians and three Americans.

On the U.S. side NRDC would be responsible for implementation of the program, with appropriate USG oversight. NRDC is a national environmental and arms control organization with a proven track record of

⁵ Sec. 212. Authority for Program to Facilitate Soviet Weapons Destruction, Cong. Record, November 25, 1991, S18003.

⁶ In the FSU *Integration* is described as an international foundation; however, its structure and purpose more closely resemble a non-profit organization than a foundation.

organizing and administering large joint research projects with Soviet scientists.⁷

As an interdisciplinary national environmental and energy policy organization with in-house legal and scientific capabilities, and longstanding ties to the U.S. scientific community concerned about nuclear and environmental issues, NRDC is uniquely equipped to help identify Russian environmental problems, define prospective solutions, and locate Western expertise to assist in addressing these problems. NRDC has ongoing joint programs in Russia and other former Soviet republics on a variety of issues, including nuclear weapons verification, Chernobyl radiation monitoring, and energy conservation. NRDC has excellent working relationships with: the department responsible for nonproliferation and military conversion (headed by Sergei Kortunov) in the Russian Foreign Ministry; the Ministry of Atomic Power and Industry (Deputy Minister Victor Mikhailov); the scientific leadership at the two nuclear weapons laboratories (Academicians Evgeniy Avrorin, scientific leader at Chelyabinsk-70, and Yuri Trutnev, deputy scientific leader at Arzamas -16); and the Russian Academy of Sciences (Vice President Evgeniy Velikhov).

⁷ NRDC organized and administered (on the American side) the path breaking 1986-89 Test Ban Verification Project. This was a four-year multi-million dollar joint research and demonstration project by NRDC and the Soviet Academy of Sciences. NRDC also organized the Black Sea Experiment on naval nuclear warhead detection in 1989 jointly with the Soviet Academy and the Kurchatov Institute of Atomic Energy, and arranged the first U.S. inspection visits to the Krasnoyarsk radar (1987), the Sary Shagan ASAT-laser research facility (1989), and the Chelyabinsk-40 production reactor site (1989).

