

### Russian Perspectives on Disposition of Excess Weapons Plutonium

The dominant perspectives on disposition of excess weapons plutonium among Russian policymakers are strikingly different from those of U.S. policymakers—a fact that continues to require delicate negotiation to build agreements that both sides see as serving their interests.

The U.S. approach to disposition of excess weapons plutonium can be summed up in five basic principles:

- Excess weapons plutonium is primarily a security issue; because of the urgency of the security threats it poses, this material should be transformed into forms that are no more attractive for recovery and use in weapons than plutonium in spent fuel as rapidly as this can be safely and securely accomplished.
- Disposition of Russian and U.S. excess weapons plutonium should proceed in a balanced way, ending ultimately with roughly equal levels of material remaining in military stockpiles—meaning that at some point Russia, which begins with a larger military stockpile of plutonium, will have to carry out greater reductions in that stockpile.
- Excess weapons plutonium has no economic value, since the cost of using it to produce nuclear energy is more than the energy is worth. Indeed, it is a substantial economic liability, since all options for its disposition will cost billions of dollars—but it is worth paying those costs for the resulting decrease in security threats.
- Because of the security dangers posed by separated plutonium, and the high costs of separating and managing it, civilian plutonium should not be reprocessed and recycled, even if some portion of excess weapons plutonium is used as reactor fuel as the most effective way to meet the security objectives of disposition. The United States should not provide material support to recycling of civilian plutonium, in Russia or elsewhere.
- Decisions on disposition of excess weapons plutonium and on the future of nuclear energy should be made separately, since the stockpiles of excess weapons plutonium are tiny in the overall global energy resources picture, and decisions on nuclear energy can be made over a period of decades, while disposition of excess weapons plutonium is comparatively urgent.

The U.S. decision to undertake a multi-billion-dollar program in which some of its excess weapons plutonium would be used as reactor fuel (once-through, with no reprocessing, and with the plutonium fuel facilities to be shut and torn down after the excess weapons plutonium mission is accomplished), and some would be immobilized with high-level wastes, was based on these basic principles.

While the U.S.-Russian Independent Scientific Commission on Disposition of Excess Weapons Plutonium, which included experts from both Russia and the United States, reached a consensus on similar principles,<sup>1</sup> the majority opinion among Russian policymakers, particularly within the Ministry of Atomic Energy, is strikingly different. This dominant Russian view is aptly summed up in an interagency “concept” for disposition of excess weapons plutonium drawn up under MINATOM’s chairmanship in 1998.<sup>2</sup> The view expressed in this official concept can be summed up in the following five principles:

- Excess weapons plutonium is primarily an energy issue: this plutonium has “significant energy potential” and its production “required great investments in material, labor, and financial resources.” It should be seen as an energy resource, along with civilian plutonium, and it is therefore acceptable to keep storing the material for now, with disposition taking place over “several decades,” a timescale “comparable with the timetables for the development and assimilation of new technologies in nuclear energy.”

<sup>1</sup> *Final Report of the U.S.-Russian Independent Scientific Commission on Disposition of Excess Weapons Plutonium*, op. cit.

<sup>2</sup> *Concept of the Russian Federation: Disposition of Plutonium Withdrawn During the Course of Nuclear Disarmament*, 1998. The working group that prepared the document was chaired by First Deputy Minister of Atomic Energy Lev Ryabev, and included representatives from most of the main departments of MINATOM and a variety of MINATOM enterprises, as well as the Ministry of Defense and the Kurchatov Institute.

- Excess weapons plutonium does also have a “political aspect” relating to the irreversibility of nuclear arms reductions (the issue of the risk of theft of such material is not mentioned as a reason to pursue disposition, except in statements that it must be adequately protected from theft). In accordance with this irreversibility objective, a “basic condition” is that “disposition of withdrawn weapons plutonium in Russia and in the USA must proceed in parallel”—and there should be equal reductions in U.S. and Russian plutonium stockpiles, not reductions to equal levels. “The quantities of plutonium that will remain necessary for purposes of national security in Russia and in the USA may not coincide.”
- Excess weapons plutonium has enormous energy value, but at present its use as fuel would involve substantial additional costs (estimated in the paper to be roughly \$1.5 billion, although different reactor options are presented that would have somewhat different costs). Therefore, if for political reasons other countries want Russia to carry out disposition sooner than it would make economic sense to do so, they should pay the cost: “*a condition for the implementation of the comprehensive use of withdrawn weapons plutonium in the Russian nuclear power industry is that Russia’s added expenditures be covered by the United States and other countries interested in the fastest and guaranteed conversion of Russian weapons plutonium into forms unsuitable for use in nuclear weapons.*” (emphasis in original)
- Plutonium recycling, ultimately in fast-neutron breeder reactors, is a desirable and essential part of the future of nuclear energy.
- Given the substantial energy content of the plutonium, decisions on disposition of excess weapons plutonium must be an integral part of decisions about the future of nuclear energy. “[T]he problem of disposition of these fissile materials must be resolved within the framework of a national strategy for the development of nuclear energy. This strategy is aimed at the gradual transition to a closed fuel cycle with the use of fast neutron reactors powered by plutonium.”

Given these principles, the concept concludes that “the aim of disposition of withdrawn weapons plutonium is its use in the nuclear power industry,” and approaches such as immobilization that do *not* make use of the energy value of the plutonium “will not be implemented.” Disposition should include “the development of production processes and technologies of a closed fuel cycle with fast reactors, all the while observing international standards of safety and nonproliferation.”

The draft agreement now nearing completion is designed to accommodate most of both sides’ basic principles. It commits Russia to move quickly on plutonium disposition, as the United States would prefer—but only if funds to cover the extra costs become available from the United States and other parties. A MOX plant built with international assistance in Russia is to be used only for disposition of excess weapons plutonium as long as that mission lasts—postponing the argument about what happens then for decades into the future. The United States will not help Russia finance and build new fast-neutron reactors, but there is no prohibition on Russia doing so, if it can find the money somewhere. For this first step, there will be equal reductions in plutonium stockpiles, but that does not resolve whether ultimately there should be reductions to equal levels. Russia will use all of its plutonium covered by the agreement, but the United States will use some as fuel and immobilize the rest (though Russian opposition to immobilization extended to seeking limits on the amount of U.S. plutonium that would be immobilized, on the argument that immobilized material could more readily be recovered for use in weapons than material that had been used as MOX<sup>3</sup>). With flexibility, persistence, and a bit of luck, it may be possible to continue to bridge these basic disagreements for the decades that will be required to complete disposition of the U.S. and Russian excess weapons plutonium.

<sup>3</sup> This is more a talking point than a serious strategic concern, since the United States is holding far larger quantities of material in reserve in the form of assembled warheads and plutonium pits ready to be assembled into such warheads. Moreover, as a variety of studies have concluded, it will cost more than a billion dollars for the United States to immobilize its plutonium, and would probably cost nearly as much to get it back out, should a decision be taken to do so, offering a substantial degree of “irreversibility” for the process. Indeed, plutonium that had been irradiated as MOX could also be recovered in similar fashion; while its isotopics would have been degraded by reactor irradiation, nuclear weapons can be made from such reactor-grade plutonium with yield, weight, and reliability comparable to weapons made from weapon-grade plutonium.