

“Nuclear Cooperation Between Russia and the United States in Irradiated Nuclear Fuel Management”

by

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Introduction

The Russian Federation has taken several steps to permit the import of foreign irradiated nuclear reactor fuel. The disposition of approximately two-thirds of the irradiated fuel in potential customer countries is controlled by the United States under consent rights the United States has with other nuclear trading partners. Much of the additional irradiated fuel is in countries that have close security relations with the United States. Thus, more than 90 percent of the foreign irradiated fuel market will be unavailable to Russia absent “An Agreement for Cooperation on Peaceful Uses of Atomic Energy” between the United States and Russia.

Russia has two options: 1) act alone and lose the market, or 2) enter into a cooperative arrangement with the United States.

On 19 October 2001, The Non-Proliferation Trust, Inc. (“NPT”), a private U.S. organization, and the Russian Association, “Non-Proliferation and Ecological Improvement” (“NP&I”) signed an agreement entitled, “Non-Proliferation Trust Long-Term Fissile Materials Safeguards and Security Project.” This agreement was drafted not only to meet Russian needs, but also to satisfy conditions that the United States government has indicated that it will impose before giving approval for the shipment of fuel under U.S. consent rights to Russia. While NPT is incorporated in the United States, its board of directors will include members from Russia, the United States and elsewhere. The NPT project is described in more detail by Mr. Robert Newman in a separate paper presented at this conference.

In brief, under the NPT agreement, 15 billion U.S. dollars (“USD 15 billion”) in revenues would be raised by storing 10,000 tonnes (t) of foreign (non-Russian and non-U.S.) irradiated nuclear fuel in Russia. USD 3.75 billion of the revenues is allocated for interim management of the irradiated fuel, and USD 11.25 billion is allocated for environmental improvements, improvements in fissile material security and humanitarian causes.

The NPT-NP&I contract is between two private parties. It includes obligations that are to be met by the U.S. and Russian governments, including Minatom and its commercial affiliates. These third party obligations are unenforceable through the NPT-NP&I contract alone. Therefore, my support of the NPT approach is conditioned on these third party obligations being included in the required Agreement for Cooperation between the United States and Russia, or through other appropriate legal instruments.

Below I describe the essential element that must be incorporated into any Russian effort involving the import of irradiated fuel of U.S. origin.

Criteria for Support of Importing U.S. Origin Irradiated Nuclear Fuel into Russia

U.S. Department of State officials have set forth several requirements that must be met before the United States would permit U.S. origin irradiated fuel to be sent to Russia:

- An Agreement on the Peaceful Uses of Atomic Energy between the United States and Russia must be in place;
- Assurance that there are sufficient resources to develop a geologic repository in Russia;
- Assurance that fuel transfers are for eventual disposal;
- Assurance that fuel will be handled safely in transit;
- Assurance that storage and disposition facilities are suitable and construction is environmentally sound; and
- Assurance that funds available for the life of the repository program

Several other condition must be met before the U.S. Congress and members of the environmental community will support shipment of U.S. origin materials to Russia:

- There will be no new commercial nuclear fuel reprocessing in Russia;
- Confidence that the environmental benefits from cleanup will greatly exceed the risks associated with importing irradiated spent fuel;
- Confidence that the revenues will be spent on the intended purpose; and
- Compliance with the U.S. Foreign Corrupt Practices Act

I will say a few words about each of these requirements.

An Agreement on the Peaceful Uses of Atomic Energy between the United States and Russia

Reaching such an agreement will require a resolution of differences between the United States and Russia regarding Russia's nuclear cooperation with Iran. Support for the NPT project, with international irradiated nuclear fuel storage under Russian, U.S. and IAEA guarantees, would create an atmosphere of trust between the United States and Russia that would bring closer together their respective positions on Iran. Minatom's continued

efforts to seek its own arrangements for import of irradiated fuel imports are likely to erode U.S.-Russian nuclear relations.

Assurance that there are sufficient resources to develop a geologic repository in Russia

Russia has a geologic disposal program for high-level nuclear waste, but there is nothing in the history of Minatom's waste management activities to give one confidence that Minatom alone will give the program sufficient priority to carry it through. Moreover, Minatom's policy regarding eventual reprocessing irradiated power reactor fuel also does not instill confidence that Minatom, if left to its own devices, will build a geologic repository.

As I tell my environmental colleagues, the NPT project represents the best hope for developing a geologic repository in Russia. It is, in fact, the only realistic proposal for funding a geologic repository in Russia. Under the NPT proposal, \$1.8 billion in revenues is allocated for geologic repository development, of which \$0.3 billion is for qualification of the repository.

Assurance that fuel transfers are for eventual disposal

The Russian laws signed by President Putin on 10 July 2001, permit the import of irradiated fuel for long-term storage and reprocessing. Minatom's policy is to eventually reprocess all imported spent fuel after several decades of interim storage. The United States will use its consent rights to enforce transfer of irradiated fuel of U.S. origin to a geological repository. The NPT proposal meets the requirements of the current Russian law and U.S. policy by deferring the issue of final disposition of the imported fuel for 40 years while a geologic repository is being constructed. Under the NPT approach, after 40 years NPT has the option of transferring the irradiated fuel to the repository, or if transfer is incompatible with Russian law, e.g., the repository even after 40 years had still not been licensed by Gosatomnadzor (GAN), NPT can renew the interim storage agreement for an additional 40 years. Any transfer of the irradiated fuel stored by NPT would be subject to U.S. government consent rights.

Assurance that fuel will be handled safely in transit

In the report, "Transportation of Radioactive Materials and Nuclear Fissile Materials in Russia: Practice of Unavoidable Risks," Russian environmentalists cite the poor maintenance of the Russian railway network and a long list of incidents documented during the past years and provide other evidence that Minatom acting alone cannot be trusted to safely transfer imported irradiated fuel. The report was co-authored by Russian environmental group Ecodefense and Vladimir Kuznetsov, expert for the Anti-Nuclear Campaign of the Socio-Ecological Union and former GAN inspector. Russian environmentalists also point to GAN's criticism of Minatom's project proposal "Analysis of the organization and effectiveness of measures in order to fulfill the current international agreements of the Russian Federation, in the context of the import, storage

and reprocessing of spent nuclear fuel (SNF) of foreign nuclear reactors” [letter from Yu.G Vishnevskiy, Head of GAN to A.Y. Rumyantsev, Minister of Atomic Energy, 31 May 2002].

The NPT proposal allocates \$2.3 billion in revenues to the purchase of approximately 1000 irradiated fuel dry storage casks and to the transportation of these casks. There is ample funding in the NPT proposal to manage the transportation and storage safely. NPT will arrange for transportation of the irradiated fuel under all applicable transportation and storage requirements of IAEA, GAN and the transport regulations of Russia and any other nation through which such casks or containers are to move the spent fuel, as well as the requirements of the International Maritime Organization for oceanic transport.

With respect to transportation of the irradiated fuel, the NPT approach stands a far better chance of receiving U.S. government approval and wider acceptance among the Russian public, than Minatom acting alone.

Assurance that storage and disposition facilities are suitable and construction is on an environmental sound basis

Under the NPT approach the dry cask interim storage facility will be fashioned after the Ahaus facility in Germany, designed by Wissenschaftlich-Technische Ingenieurberatung GmbH (WTI) and operated by Gesellschaft für Nuklear Service mbH (GNS). The Russian facility will meet the regulatory requirements of the IAEA and GAN and the technical regulatory requirements of the U.S. and German regulatory bodies. NPT will have construction and operational oversight over the facility.

Assurance that funds available for the life of the repository program

If Minatom were to manage the revenues from storage of foreign irradiated fuel, it would be difficult to provide adequate assurance to the United States Congress that construction and operating funds would be available for the life of the geologic repository.

Under the NPT approach these funds allocated for repository construction are held by a trust operating under United States law and the laws of the state of Delaware. This is the best way to provide the kind of assurance required by the United States government, including the U.S. Congress.

There will be no new commercial nuclear fuel reprocessing in Russia

It is less expensive to mine and enrich uranium and fabricate low-enriched uranium fuel than it is to reprocess irradiated fuel and separate and recycle the unused uranium and plutonium. This is likely to remain the case into the foreseeable future. Even Minatom agrees that it is awash in separated plutonium and there is no economic justification for building new reprocessing plants for decades.

Aqueous reprocessing has been responsible for most of the routine releases of radioactivity from the nuclear fuel cycle in Russia. In fact the managing of reprocessing plants and nuclear waste facilities by Minatom and its predecessor agencies has resulted in appalling environmental contamination at Ozersk (Mayak) and other nuclear reprocessing centers in Russia.

Separation and storage of plutonium increases the risk that plutonium will be diverted and find its way into nuclear weapons in the hands of states of concern or state sponsored terrorists. Separated plutonium in Russia places Russians and Americans at risk.

There is simply no good reason to continue civil reprocessing in Russia for the foreseeable future. The United States Congress is unlikely to approve of any Agreement for Cooperation on the Peaceful Uses of Atomic Energy with Russia if Russia insists on continued commercial reprocessing.

Under the NPT agreement Russia must agree to a joint moratorium on new commercial reprocessing for a period of thirty years. This is consistent with the claim Minatom made to the Duma during the legislative debate that it would defer construction of new commercial reprocessing plant for a period of 20 to 40 years.

Confidence that the environmental benefits from cleanup will greatly exceed the risks associated with importing irradiated spent fuel

Given the track record since the first plutonium production facilities were placed into operation in the 1948-49 period, there is no basis for having confidence that Minatom will make substantial investments in environmental restoration.

By contrast, the NPT has allocated \$3 billion for environmental cleanup. These funds will be administered by the Russian Environmental Trust. The majority of the trustees of the Russian Environmental Trust will be leaders of the environmental community and well known experts on nuclear safety.

The Russian Association, “Non-Proliferation and Ecological Improvement” (“NP&I”) has identified a number of environmental initiatives for funding consideration by the Russian Environmental Trust, including, for example at Ozersk,

- filling in Lake Karachay;
- localizing the contaminated aquifer associated with Lake Karachay; and
- rehabilitating the Techa River flood-plain near Muslyumovo

Addressing these three issues alone will result in environmental benefits that far outweigh the added risk associated with importing foreign irradiated fuel. Under the NPT proposal \$300 million of the revenues will be transferred to the Russian Environmental Trust at the Start Date, when all the legal requirements have been met and all the financial obligations are in place. Thus, the environmental benefits of the project commence while the storage

facility is being constructed and before any foreign irradiated fuel is shipped to Russia under the NPT project.

If the NPT proposal does not go forward, Russia can look forward to another decade similar to the last. From an environmental prospective the *status quo* is far worse than importing foreign irradiated fuel under the NPT proposal.

Confidence that the revenues will be spent on the intended purpose

It is a simple truth; the United States government is not going to permit Minatom to manage and allocate billions of dollars in revenues from importing irradiated fuel under U.S. consent rights.

Under the NPT approach, NPT will be responsible for management of the \$3.75 billion in revenues allocated to management of the imported fuel, and three trusts have been established to oversee distribution of more than \$11 billion allocated to environmental restoration, fissile material security, alternative jobs for nuclear workers and humanitarian assistance. The trustees of the three trusts are obligated under U.S. law to insure that the trust revenues are spent as intended.

Compliance with the Foreign Corrupt Practices Act and other applicable laws

Under the NPT contract with NP&I all activities undertaken in performance of the contract must be in full compliance with: a) the laws of Russia, including GAN licensing authority; b) the laws of the United States, including the U.S. Atomic Energy Act of 1954, as amended and Delaware law concerning corporate behavior, and specifically, with the United States Foreign Corrupt Practices Act of 1977, as amended; c) the requirements of the IAEA, and d) any U.S.-Russian bilateral agreements. Since NPT is incorporated in the United States in the state of Delaware, the U.S. laws, including the Foreign Corrupt Practices Act are enforceable in U.S courts of law.

Conclusion

The NPT agreement is more beneficial to Russia than proposals offered by Minatom officials to date, and it represents the best hope for improving the environment at nuclear sites in Russia and for accelerating the improvements in fissile material security. If the NPT agreement is not implemented, continuation of the *status quo* will lead to further environmental degradation and a higher risk that weapon-usable materials will be diverted for unauthorized use. I respectfully request that Minatom formally endorse the NPT-NP&I approach as the best mechanism for importing foreign irradiated fuel. It is time for us to pull together to improve the quality of the human environment.