

Russia to the Rescue?

International Spent-Fuel Storage Options Discussed at the ANS Annual Meeting

A technical session on International Storage of High-Level Waste and Spent Fuel at the 2002 American Nuclear Society Annual Meeting (held June 9–13 in Hollywood, Fla.) was really a session on the possibility that the Russian Federation will open a spent-fuel storage installation—perhaps combined with the reprocessing option—that would be available to all nations. The session was organized by Herbert Feinroth of Gamma Engineering and chaired by Reed Johnson of the University of Virginia.

The lead speaker, Sergey Ivanov, from the Ministry of Atomic Energy (Minatom), noted that the idea

first came up in the mid-1990s when Minatom, facing a financial shortfall in the midst of Russia's more general economic crisis, began looking for ways to cover its operating costs. At that time, however, legislation in Russia banned the import of waste and materials for storage and disposal.

New laws and amendments to federal laws passed in mid-2001, with the crucial support of Russian President Putin, have changed the situation, Ivanov said. These new laws allow the import of what the Russians term "irradiated nuclear fuel" (INF) for reprocessing and/or storage. By the fall of this year, Russia hopes to have

legislation passed that would establish the administrative procedures to govern how the project will actually work.

What comes next, Ivanov said, will be development of the necessary infrastructure, including construction of INF storage, modernization of reprocessing plants, construction of necessary seaports and rail terminals, acquisition of transport means, and production of INF canisters. Because of international scrutiny, the infrastructure components will be held to the highest standards, Ivanov said.

The major hurdle now is cost, Ivanov continued. An investment

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of some \$2 billion to \$3 billion is needed soon. The source of these funds could be the Russian Federation state budget, Russian Federation enterprise working capital, customer payments, bank credits, or direct investments. And, he added, with the legislation in place, now is the time to begin marketing efforts and the search for a strategic partner.

One irony of the whole project: Minatom, which originally pursued the idea as an income-generating measure, would not benefit from any profits produced by the scheme. Instead, 75 percent of the profits will support cleanup efforts at Russian

nuclear sites, while 25 percent will go to humanitarian efforts in the local regions where the facilities may be located. Nonetheless, Minatom is very

supportive of the project, Ivanov said.

In response to an audience question, Ivanov noted that Russian law

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does not prohibit final disposal of imported INF.

Not So Fast, the U.S. Says

Alex Burkart, from the U.S. State Department, stated that one major political hurdle remaining before the Russian project can be considered viable comes from the fact that some 80 percent of the world's spent nuclear fuel is of U.S. origin and therefore subject to U.S. consent rights. The most frequently mentioned potential customers for an international repository are Taiwan and Korea, because both have large quantities of spent fuel and the necessary money to be able to afford an international solution. However, all of the fuel in Taiwan and most of the fuel in Korea is subject to U.S. consent rights.

U.S. consent will not be forthcoming, Burkart said, as long as there remains the problem of Russian cooperation with Iran. The United States and Russia must have an agreement for cooperation in force before any U.S.-origin nuclear materials can be shipped to Russia, and no agreement can be set in place until U.S. concerns over Russia's cooperation with Iran

what lies ahead is a very difficult political task but a very simple technical task.

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spent-fuel storage/disposal facilities. Thus, he said, the IAEA considers the issue to be one for which the agency should be taking steps to stimulate discussion.

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aboveground spent-fuel storage facility (based on the Ahaus design) in the Vladivostok area (in far eastern Russia and thus close to potential customers in Taiwan, Korea, and Japan, although European customers would also be welcome). The facility would store some 10 000 metric tons of spent fuel, would operate for some 40–80 years, and would generate some \$15 billion in revenues. The project is currently looking for venture capital to support construction. The Iran issue remains the major

One other significant issue remaining to be resolved, he said, is transportation, especially if there are third countries in the transport route or if the transportation takes place in international waters.

Ralph Stoll, an independent consultant and a former vice president of the now-inactive Pangea Project (which also promoted an international repository), asked the basic question: "How do you move forward on such a project?"

His answer: "Use a phased approach." Governments can more easily get behind a beginning phase if it includes the rapid conversion of plutonium metal to plutonium oxide. Of course, he said, this means you need a viable nuclear industry to burn the oxide in mixed-oxide fuel. But what is also needed, Stoll said, is an entity to make things happen. This entity could be an existing one, like the World Bank, or an entirely new, dedicated one.

In the post-9/11 world, Stoll concluded, the nuclear industry can be seen as part of the *solution* for reducing the terrorist threat surrounding nuclear materials, with the conversion of fissile materials into a spent-fuel standard and the removal of the threat through safe storage and disposal.—*Nancy J. Zacha, Editor* ■

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Supporting Entities

Agencies other than the Russian government are supportive of this effort to get that country into the spent-fuel storage business. Bob Newman, president of the Nonproliferation Trust Project, noted that

stumbling block, Newman said, echoing Burkart.

The International Atomic Energy Agency (IAEA) feels that international storage is a "feasible" concern, albeit one with many political, social, and public acceptance issues yet to be resolved, according to C. K. Choi, an associate director at Lawrence Livermore National Laboratory and a consultant to the IAEA. It's hard to imagine, he said, 34 nations plus Taiwan being able to develop individual

More session reports from this year's American Nuclear Society Annual Meeting will appear in the September/October 2002 issue of *Radwaste Solutions*.