Minatom: the GRAB FOR TRASH

by Paul Webster

Of all of Siberia's far-flung nuclear cities, Krasnoyarsk—a gritty industrial hub 1,500 miles east of Moscow—holds pride of place as Russia's preeminent nuclear town. Surrounded by a maze of uranium mines, a massive underground plutonium plant, the country's largest spent-fuel storage facility, a large uranium enrichment plant, and two spent fuel-reprocessing plants, Krasnoyarsk is nuclear to its core.

Stalin chose this remote city as a nuclear center in 1950. Ever since, its fate has been inextricably tied to the labyrinthian Moscow office block near the Kremlin that was home to the Soviet, now Russian, Ministry of Atomic Energy (Minatom). Two years ago, when Minatom officials put Krasnoyarsk at the center of a bold, $20 billion plan to reprocess spent nuclear fuel imported from around the world, few in the city were surprised—and, after years of starvation wages at nuclear plants impoverished after the Soviet collapse, most were relieved.

When a petition signed by millions that called for a referendum on Minatom's plan to import and reprocess spent fuel was rejected by the courts early last year, people in Krasnoyarsk started believing that the local nuclear plants might really be on the verge of a major comeback. Once the plan was signed by Russian President Vladimir Putin last July, Minatom moved quickly, pursuing contracts to import spent fuel from across the former Soviet Union and opening talks with Britain and Finland.

According to Minatom, these early contracts are merely the prelude to the big prize—contracts to take in the 33,000 metric tons of U.S.-origin spent fuel piled

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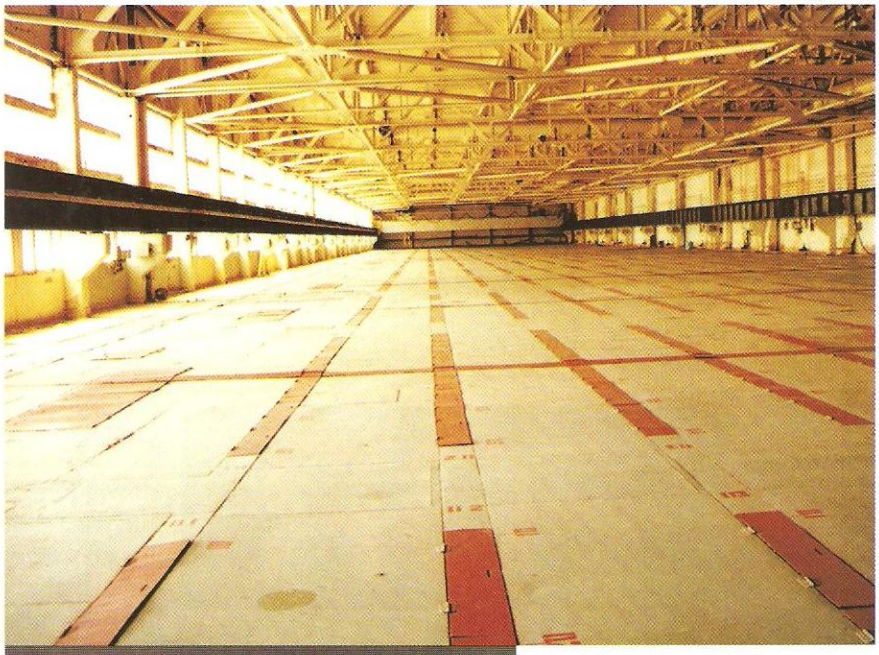


2001: Inside the half-built reprocessing center at Krasnoyarsk.

up in Brazil, the Czech Republic, India, Japan, Mexico, Slovenia, South Korea, Switzerland, Taiwan, and the European Union. This spent fuel, which the United States originally pledged to take back, is still governed by a 1954 U.S. nonproliferation law. But taking back all this waste is no longer politically feasible in the United States.

Having conquered Moscow, Minatom is now marching on Washington. And opinions at the State and Energy Departments suggest that its overtures are not unwelcome, despite objections centering on the lack of a "peaceful nuclear cooperation agreement" between the United States and Russia.

"We are in favor of trying to see if the conditions can be met," Alex Burkart, deputy director of the State Department's Office of Nuclear Energy Affairs, says about the possibility of sending U.S.-origin spent fuel to Russia. "There are no naysayers here."

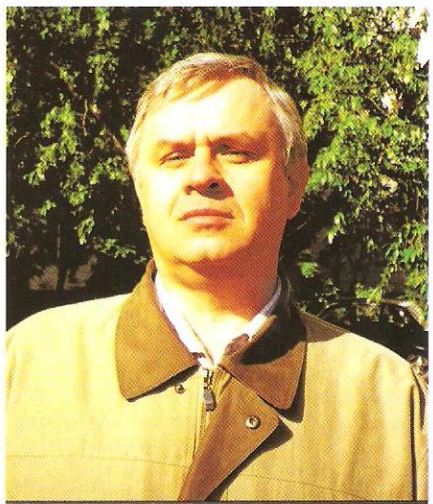
U.S. nuclear programs in Russia are already spending millions of dollars on research in preparation for what could be the only politically acceptable solution to America's international nuclear waste problem. "The notion is taken seriously," Burkart says. "Generally, it's a good idea."

As the word has spread, however, that the United States controls more than 85 percent of the world's spent fuel, and therefore the terms of Minatom's spent fuel plan will be dictated not in Moscow, but in Washington, views have shifted in Krasnoyarsk.

In a remarkable twist that reveals as much about the persistence of the Cold War mentality in Russia's nuclear heartland as it does about environmental logic, Krasnoyarsk has become the rallying point for opposition across Russia to Minatom's grand grab for dominance in the global spent fuel market.

"Lots of people in Krasnoyarsk have supported importing spent fuel if it makes money," explains Vladimir Sliyvak, a leading national critic of Minatom's spent fuel plan. "But as it becomes better known that Minatom needs the U.S.-owned material to really make money, things are changing. Because when you ask the people who support Minatom's plan whether they'd accept American nuclear imports, they utterly reject it. After helping build the Soviet nuclear shield through the Cold War, people in Krasnoyarsk can't accept that."

In December 2000, more than 150 environmental groups—led by activists in Krasnoyarsk, Moscow, and Washington—petitioned the State Department to block plans to ship U.S.-origin spent fuel to Russia. Last fall in Krasnoyarsk, 40,000 people followed up on this request with a petition calling for a regional plebiscite on Minatom's plans. When that died in court in February—on the same signature-counting technicality that defeated the national petition last year—hundreds of protesters denouncing Minatom's import plan marched along the frigid rail line from town to the gates of the Minatom reprocessing plant. Sympathetic rallies were held on the trans-Siberian railway line in Novosibirsk, where protesters symbolically focused on Minatom's intention to use the world-famous railway to ship spent U.S.-origin nuclear fuel from Pacific-rim nations. In Krasnoyarsk, Minatom's opponents posted a key U.S. study promoting their region for a geologic repository site for U.S.-origin fuel on their web site. Vladimir Mikheev, leader of the



Environmentalist and former nuclear engineer, Vladimir Kuznetsov, June 2002.

Krasnoyarsk group protesting Minatom's plans, notes that Minatom intends to build a 33,000-metric-ton dry storage facility for spent nuclear fuel—exactly the size needed to handle the U.S.-origin inventory. Mikheev says the Siberian campaign will intensify this June. "We plan major protests near the reprocessing facility," he says.

Despite the tension in Krasnoyarsk, in Moscow Minatom's focus remains intently fixed on Washington. So far, the State Department has cited two fundamental obstacles to approving spent fuel export contracts with Russia.

First, says Burkart of the State Department's Office of Nuclear Energy Affairs, plutonium proliferation concerns preclude U.S. acceptance of any plan to reprocess U.S.-origin spent fuel. Second, Minatom's dealings with Iran, where Russians are building a power plant at Bushehr, which the United States alleges is connected to a weapons program, are a major "tripping point."

Minatom spokesman Yuri Bespalko says that conditions are not yet ripe to overcome U.S. objections. But, he says, the ministry will eventually succeed.

In a meeting with Russian environmental groups in early April, Minatom head Alexander Rumyantsev said the new war on terrorism shows the importance of Minatom's plan to import U.S.-origin fuel. Rumyantsev said he renewed negotiations with U.S. officials after September 11 by arguing that Minatom needs funds from spent fuel contracts to improve the protection of its facilities against terrorists. Foreign Minister Sergei Ivanov, who is also working to win spent fuel contracts, recently reassured Washington that Minatom's exports to Iran are for peaceful purposes.

Beyond lobbying, Minatom has moved to overcome State Department opposition by bolstering nuclear cooperation and by offering a moratorium on reprocessing U.S.-origin spent fuel imports. The moratorium offer was easy; in any case, Minatom's plan calls for spent fuel to be stored for 30 years before reprocessing.

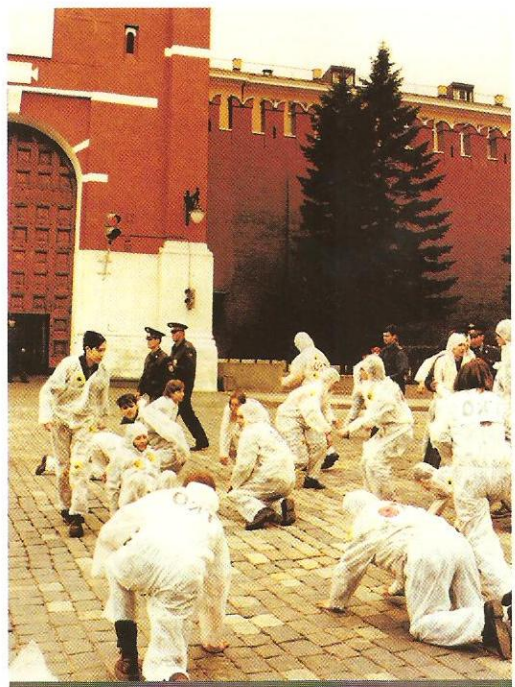
But Russian critics of the plan pounced on the moratorium offer as evidence that the program was merely a dumping plan in disguise, intended to persuade the Russian lawmakers who overwhelmingly voted to support it last year that it represents a massively profitable venture into international reprocessing rather than a politically unpalatable dumping plan.

Vladimir Kuznetsov, a nuclear engineer who left the Russian nuclear regulatory agency GAN to join Mikhail Gorbachev's Green Cross environmental group, says he opposes spent fuel reprocessing because of the sizable radioactive waste byproducts it creates. But he thinks Minatom may have no intention of reprocessing anyway. "Minatom says its plan is to store imported spent fuel for 30 years, then reprocess it. But these people won't be running the operation 30 years from now. This stuff could all quite easily end up in a permanent repository here."

Indicating it might indeed offer permanent guarantees that spent fuel will not be reprocessed, Minatom is also researching the development of a permanent geological facility near Krasnoyarsk. And Minatom has suggested that U.S. policy-makers should recognize that a Russian solution to the U.S.-origin spent fuel problem would repay the billions invested by U.S. agencies in Russian nuclear security over the last decade.

In return, U.S. agencies have done much more than offer encouraging words for Minatom's effort. As part of a program born out of the U.S.-Russian Excess Weapons Plutonium Disposition Program, the Energy Department has been helping to fund Russia's geological repository investigation since 1995. Thanks to a prolific collaboration between Les Jardine of Lawrence Livermore National Laboratory and Tatiana Gupalo of the All-Russian Research and Design Institute of Production Engineering (Vnipipt) in Moscow, Energy has helped produce numerous studies that expand the very substantial research base already created by Soviet investigators.

While the first U.S.-Russian studies focused on geologic disposal of plutonium-containing materials and immobilized plutonium waste forms, between 1996 and 2001 a series of four Energy-funded studies looked at aspects of plutonium migrations, other radionuclide migrations, engineered barrier materials, and computer modeling approaches.



April 2002: Demonstrators in Moscow protest Minatom's spent fuel import plans.

Recent experiments tested radionuclide and plutonium migration in underground rock at facilities in Krasnoyarsk, using plutonium encased in glass along with other fission products and a simulated engineered bar-

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A nuclear waste rail car is unloaded at the Krasnoyarsk facility.

rier. Another Livermore-Vnipipt contract produced an integrated plan for developing Russian geologic repositories at two sites near Krasnoyarsk and Mayak. A Livermore contract with the Khlopin Radium Institute in St. Petersburg researched the geological plan for the Krasnoyarsk site. According to Jardine, the final reports from these studies were approved by Minatom and represent the "current approved Minatom plan for developing geologic repositories in Russia at these two sites."

All that's needed to get started on building a facility, Jardine suggests, is a legal charter from the Russian government and the necessary funds. According to a feasibility study that Jardine prepared for the Energy Department in 2000, if the U.S.-origin spent fuel in Taiwan were disposed of in Russia, the billions Taiwan has in reserve for its disposition would pay for building the repository.

As Energy's recent statement of decision on the Yucca Mountain repository in Nevada emphasizes, the department is keen to see Russia build a repository as well. Energy Secretary Abraham described Yucca Mountain as "an important signal to other nuclear countries." He added, "We can't expect them to site a facility if we, with more resources, won't."

Jim Werner, until last year director of the Office of Long-Term Stewardship in the department's environmental management program, says Energy knows too well that repatriating U.S.-origin spent fuel would be next to impossible. Enthusiasm about a Russian geologic repository, in tandem with evidence of support within the department for Minatom's offer to accept U.S.-origin spent fuel, can be partly explained by Energy's experience with the bitterly contested 1993 plan to repatriate U.S.-owned spent fuel from foreign research reactors.

Although that reactor fuel was considerably more dangerous from a proliferation point of view, Energy still faced bitter opposition when the department decided to bring it home, says Werner. "Little did I know how complicated it would be," Werner says of his ultimately successful five-year effort to overcome opposition.

That's a point the State Department also keeps in mind, says Alex Burkart. "We cannot expect to see the United States giving consideration to taking irradiated U.S.-origin fuel supplied for electricity generation back for storage and disposition, in Yucca Mountain or elsewhere." In fact, he points out, in 1982 Congress prohibited the executive branch from spending money just to formulate or review a plan for its return.

Burkart says the State Department might be willing to approve shipments to another country, even if that country did not yet have a geologic repository. "We would not necessarily expect the permanent repository to be available immediately, and we can see a period of long-term storage as part of any scheme," he says. "But any scheme should involve specific plans for, and specific commitment of sufficient resources to, the development of a geologic repository."

Despite all the indications that U.S. officials are serious about a Russian repository, Jardine says the question of the ultimate disposition of spent fuel is potentially explosive: "The import of spent fuel into Russia. Twenty billion dollars in income. The U.S. owns 90 percent of it. There's a bunch of land mines there."

SEIZING ON JARDINE'S FEASIBILITY study as evidence of a U.S. plan to dump spent fuel, environmentalists in Krasnoyarsk translated it into Russian and posted it on their Web site. According to Vladimir Mikheev, head of the Citizen Center On Nuclear Non-Proliferation in Krasnoyarsk, Jardine's work provides key evidence of the danger his group warns against. "The United States would like to use Krasnoyarsk to solve its foreign nuclear waste problems," he says. "And as far as we can tell, Minatom will happily oblige."

One U.S. non-governmental organization promoting the idea of a

Russian solution for U.S.-origin spent fuel got a sense of the emotions surrounding the issue recently when its concept was greeted with angry reactions in both countries. That plan, developed by Tom Cochran, a physicist at the Natural Resources Defense Council in Washington, D.C., is known as the "Non Proliferation Trust." Cochran proposes that Russia store 10,000 metric tons of spent fuel from nuclear reactors worldwide for 40 years, at a price of $1.5 million per metric ton of fuel. The money would be held by the Trust, and be used to "finance a future geologic repository in Russia to permanently house the spent fuel rods."

Although enthusiasm for Cochran's idea has waned in Washington since the State Department raised concerns about Minatom's reprocessing program and its dealings with Iran, Cochran argues that the Trust proposal "is consistent with the State Department's position" on nonproliferation questions. "The principal obstacle is not a reprocessing moratorium," which Minatom will agree to, he says, "but Russia's cooperation with Iran on nuclear matters."

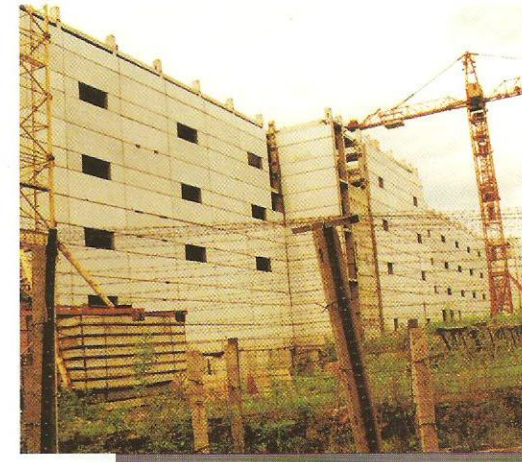
RESEARCH ON A GEOLOGICAL REPOSITORY is by no means Energy's only program in harmony with Minatom's push to store U.S.-origin spent fuel. Energy's $419 million request for nuclear programs in the former Soviet Union next year increases funding for a multitude of programs delivering invaluable insight into, and influence within, the still-secretive Russian nuclear industry. While continued U.S. funding for Russian geological repository research was not included in next year's budget request, Energy has substantially increased funding for a program to repatriate highly enriched uranium from Russian-supplied research reactors around the world, boosted a program securing Russian nuclear fuel sites, and generously expanded programs to consolidate and enhance the physical security of other Russian nuclear material sites. Vast infusions of funds, year after year, have given Energy remarkable power and reach across a wide spectrum of program areas in which the United States is testing its confidence in Minatom as a business partner.

Like Energy, the Defense and State Departments, which together requested $537 million for nuclear programs in the former Soviet Union next year, also have important programs that dovetail with Minatom's push to import U.S.-origin spent fuel. These programs principally focus on Minatom's need to improve nuclear transportation and border controls. For 2003, Defense has requested $19.7 million for a Nuclear Weapons Transportation Security program to help move nuclear weapons from Russian defense sites to Minatom facilities. In 2001, Defense funded 53 nuclear warhead rail shipments and paid for the maintenance of 79 Russian railcars and specialized emergency response vehicles. For 2003, Defense and State have requested $57.4 million for programs to enhance nuclear safety around Russia's borders.

Seen as a whole, the Defense and Energy Departments are engaged in an impressive array of programs that could have big spin-off impacts in helping make Russia safe for American spent-fuel imports. Leonard Spector, who served as deputy assistant secretary of energy for arms control and nonproliferation until 2001, says that Energy followed the progress of the Minatom plan into law very closely. Once Russia was ready to do business, "We were prepared to support the legal steps necessary to permit U.S.-origin spent fuel to be imported," he says.

According to Spector, the hope was that the prospect of winning the U.S. spent fuel business would make Minatom see the wisdom of U.S. opposition to reprocessing and Russia's exports to Iran. "Our principal hope was that the revenue potential of the initiative would lead Russia to give up nuclear dealings with Iran. The fact that spent fuel might be taken from politically sensitive areas, such as Taiwan, was also appreciated," Spector says of Energy's policy through the Clinton era.

"Regarding ultimate disposition, we began talks aimed at seeing whether joint research on geologic disposal would be mutually beneficial. So, we were definitely thinking about this approach."



2001: Behind barbed wire, the reprocessing facility is still under construction.

Overcoming Minatom's reprocessing strategy through a permanent geologic repository in Russia, however, is only half the problem facing proponents of U.S.-spent fuel exports. The State Department's insistence on signing a nuclear cooperation agreement is another story. And the hardening of the U.S. position on Iran after the September 11 attacks was something Minatom obviously couldn't have foreseen.

For Minatom to overcome U.S. objections to its exports to Iran, it will have to back away from current discussions about building a second reactor, and wait for history to inter-

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vene. In a business with timelines notched by the decade, Minatom may calculate that a regime change in Iran will sooner or later pave the way for the agreement it needs before U.S.-origin spent fuel can be imported. In the meantime, many Russian nonproliferation experts believe that U.S. objections based on exports to Iran are unfair. Vladimir Orlov, director of Moscow's PIR Center for Policy Studies, a nonproliferation think tank funded by U.S. foundations, argues that "strict compliance with the nonproliferation regime does not preclude Minatom's nuclear export activities." In Orlov's view, "There is no reason why Russia should not proceed with the Bushehr plant in Iran."

In a major report urging the United States to expand nuclear relations with Russia, Sigfried Hecker, director of the Los Alamos National Laboratory until 1997 and a key architect of nuclear cooperation with Russia after the Soviet collapse, argues that while differences over Russian exports including missile technology and the Bushehr reactor have created friction, more recently Russia has made important moves addressing State Department concerns. Export control laws have been tightened considerably, Hecker notes, and Minatom officials and Russian specialists have promoted greater collaboration on proliferation risk analysis and nuclear power safety research. Hecker says there is "reason to hope" that recently appointed Minatom head Alexander Rumyantsev "will be more attuned to U.S. concerns in this realm" than were his predecessors, Viktor Mikhailov and Yevgeni Adamov.

According to Hecker "Russia will most likely pursue its own development of nuclear power and expand its exports regardless" of U.S. demands. But, he says, U.S. control over much of the spent fuel Russia wants to import gives the United States "significant leverage." Hecker recommends a joint technical evaluation of Minatom's offer to accept U.S-origin fuel.

Aware that its missile and nuclear deals with Iran are denying it a potentially huge financial windfall, the Russian government is using diplomatic pressure to urge the State Department to accept that its nuclear involvement with Iran is peaceful. Foreign Minister Ivanov has repeatedly urged the United States to remember that Russia is far closer to Iran than the United States, and that the power plant Russia is building there closely resembles the plant that the United States, Japan, and South Korea are building in North Korea.

Although North Korea, unlike Iran, pledged to abandon nuclear weapons development in return for foreign nuclear assistance, Minatom spokesman Bespalko points out that Iran is a long-time member of the International Atomic Energy Agency (IAEA) and therefore subject to international proliferation controls. "We are sure Iran's nuclear program is peaceful," he says. He also points out that as an IAEA member, "Iran is not obliged to give further guarantees concerning weapons proliferation."

According to Minatom, sending U.S.-origin spent fuel to Russia would benefit international nonproliferation efforts. "We are trying to convince them that it's better to have this material under international control in Russia," Bespalko says, in an echo of the Non Proliferation Trust's thesis, "than it is to have it scattered around the world."

Confident that sooner or later it will succeed, Minatom seems to be banking on a deal with Taiwan, where, says Jardine, storage space will run out in 2007. According to a series of documents leaked to Minatom's Russian critics, the Russian parliament is being lobbied to okay the importation of low-level waste from Taiwan. Bespalko confirms that Taiwan is an early candidate to sign the first contract.

As awareness grows in Krasnoyarsk that this seemingly remote region is at the center of a global plan that would lay some of the most troubling U.S. nuclear ghosts to rest while refinancing the Russian nuclear industry, observers like Vladimir Mikheev say they'll fight Minatom every step of the way. Indeed, Minatom's very first success in promoting its plan is still contested.

Russian environmentalists continue to protest the Central Election Commission's rejection of the petition they presented bearing 2.5 million signatures calling for a national referendum on Minatom's plan in late 2000. Environmentalists have appealed that decision to the European Court of Human Rights, and they expect hearings to begin next year. Minatom's opponents say they will also appeal the rejection of the petition signed by 40,000 in Krasnoyarsk on similar grounds by a regional court last winter.

In the end though, and perhaps rather surprisingly for observers who watched President Putin sign Minatom's plan into law last summer, U.S. spent-fuel imports may face the toughest scrutiny of all in the Kremlin, where Putin's national security advisers two years ago tucked a blunt expression of concern about Minatom's import plan into Russia's National Security Concept, a major policy document released by the government shortly after Putin took office.

Among the numerous threats Russia faces, the president's advisers warned, along with terrorism, separatism, and foreign encroachment, is one tellingly specific environmental threat. "There is a trend for Russia to be used as a place for reprocessing and burying environmentally dangerous materials and substances," they said.

An updated version of the National Security Concept is expected soon. People on both sides of Krasnoyarsk's nuclear divide will be watching carefully for revisions. ❋