A Race With the Terrorists

It takes 55 pounds of highly enriched uranium to build a nuclear bomb. Two Americans travel the globe to keep the fuel under wraps.

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DA LAT, VIETNAM — Over the last three years, two U.S. nuclear weapons experts have quietly crisscrossed the globe, racing to secure bomb-grade uranium before terrorists can lay their hands on a single kilogram.

Andrew Bieniawski, 40, a boyish-looking immigrant from South Africa, has led the effort by the National Nuclear Security Administration, slogging from reactor to reactor trying to persuade foreign scientists and government officials to give up their highly enriched uranium fuel.

Igor Bolshinsky, 49, an affable Ukrainian immigrant who works for Idaho National Laboratory, is Bieniawski's right-hand man. He is away from his family in Milwaukee even more often than his boss, frequenting places like Uzbekistan, Libya and Kyrgyzstan. "What is it, September? It's been 18 trips this year," Bolshinsky said.

What may seem like a simple idea to make the world safer by locking down nuclear bomb materials is actually a tangle of political details, technical arguments about transportation safety and complex international shipping licenses.

Knowing how to schmooze turns out to be an invaluable skill in the war on terrorism.

The two engineers scored their latest success less than two weeks ago: They moved nearly 10 pounds of highly enriched uranium from a reactor in Vietnam to Russia, where it will be blended down into commercial reactor fuel.

At the Da Lat reactor, Bolshinsky climbed on top of the yellow concrete core, watching rubber-gloved technicians carefully loading new fuel rods of lower-grade uranium into the cooling water. That night, he was up late in his hotel room composing a formal protocol for the fuel exchange the next day.

Meanwhile, Bieniawski, in a crisp, white shirt with an open collar, walked with his arm on the shoulder of Vietnam's senior nuclear scientist, assuring him that he was following the same path as U.S. and other Western research directors, helping to make the world safer.

The Vietnam trip, like many others, also required overcoming a few old antagonisms. In shipping the uranium out of Vietnam, it was the first time Americans had set foot on the old Tan Son Nhut Air Base in Ho Chi Minh City "since you bombed us," a Vietnamese military official lectured.

Bieniawski's team has conducted 13 missions to civilian reactors in former Soviet Union republics and client states, securing enough fissile matter to build 20 nuclear bombs.

Other missions have upgraded security at hundreds of hospitals and other sites with radioactive isotopes, including 14 U.S. universities. Purdue University in

Indiana gave up its weapons-grade uranium earlier this month, and the last 11. university reactors are to be converted by 2014.

Nuclear weapons experts like Matthew Bunn of Harvard University say the program, known as the Global Threat Reduction Initiative, is one of the most effective U.S. efforts to preclude nuclear terrorism, not to mention one of the cheapest.

Bieniawski's team has a budget of $115 million this year, just about what the war in Iraq costs every seven hours.

Will it prevent a catastrophic terrorist attack? Perhaps not, Bieniawski admitted. "It is not a theoretical threat," he said in an interview inside the Da Lat reactor, while he watched Russian and Vietnamese technicians carefully packaging the highly enriched uranium fuel rods for shipment. "It is more than talk. We should never be too overconfident or arrogant to think that we have eliminated the threat."

That's not a gut assessment, but a conclusion based on secret intelligence reports on nuclear terrorism. And although the risks may be declining, he warned: "My personal view is that there is a likelihood in our lifetime there will be a radiological dispersal device or an improvised nuclear weapon."

A nuclear bomb requires at least 55 pounds of highly enriched uranium or 18 pounds of plutonium, according to unclassified estimates. An unsophisticated design would need far more material, yet still be powerful enough to flatten the downtown of a big city.

The odds, however, don't discourage him.

"It makes you work all the harder," he said with an ever-present enthusiasm. "Every kilogram we can get is one less kilogram that is out there."

A lot of highly enriched uranium and plutonium remains scattered across the globe. Belarus and Ukraine have stockpiles that they are not yet giving up. South Africa is holding on to its stockpile from a weapons program during the Apartheid era.

Both of these immigrants are frantically trying to prevent one of the gravest threats to U.S. public safety: the detonation of a crude nuclear bomb or a dirty bomb. Securing massive amounts of fissile materials has moved to the front line of protecting the nation.

The U.S. and Russia produced more than 4 million pounds of highly enriched uranium during the Cold War, according to Laura Holgate of the Nuclear Threat Initiative, a private group that pushes for nonproliferation.

A series of U.S. agreements has helped dispose of large chunks. Among the first was Project Sapphire, which secretly moved 1,278 pounds of bomb material from Kazakhstan to Tennessee in 1994. Later, the U.S. cut a deal with Russia to convert 1 million pounds of its war materials to reactor fuel, which now provides 10% of U.S. electricity.

Those efforts dealt with military stocks. Three years ago, the Global Threat Reduction Initiative was launched to deal with civilian materials. Bieniawski said the

U.S. and Russia had removed or locked down about half of the 7,000 pounds of bomb-grade uranium and plutonium held outside Russian or Western military organizations' control.

It has involved painstaking work and haggling, much of it by Bieniawski and Bolshinsky.

The Czech Republic is ready to ship a large quantity of highly enriched uranium to Russia, but the material must pass through Ukraine, and rapid-fire changes in that government have held up approval of transport licenses. The situation causes Bolshinsky to roll his eyes and vow to redouble his efforts.

Glitches can pop up at any time. In December, a military convoy in Germany carrying 590 pounds of highly enriched uranium from a former East German reactor was blocked in the middle of the night by a Greenpeace sit-in. The stalled convoy was considered a sitting duck for a terrorist assault. After a 25-minute standoff, an alternate route was used.

Bieniawski and Bolshinsky were accompanied to Vietnam by several others from the National Nuclear Security Administration, a unit of the Energy Department.

In Libya, the team was dogged at every step by gun-wielding soldiers. And in many communist states, the team's phone calls are monitored and suspicious-looking individuals seem to lurk around.

On a bumpy bus ride through rural Vietnam one day, the team members concluded that their luggage had been searched, prompting a round of speculation about Vietnam's interest in their underwear.

Though the team has gained respect in Washington for its dedication, some critics fault the Bush administration, saying it has not moved fast enough. And others say the program should be encouraging countries to completely shut down research reactors, not simply convert to low-enriched uranium.

William Tobey, head of nonproliferation at the National Nuclear Security Administration, said Bieniawski's program was budgeted to get an additional $15 million next year. Overall, nonproliferation spending has doubled since 2001, to $1.7 billion annually.

The risk of nuclear terrorism grew roots half a century ago, when the Soviet Union and the U.S. handed out reactors as a way to strengthen military alliances during the Cold War.

In 1963, the Da Lat reactor, built by San Diego-based General Atomics, was supplied with U.S. bomb-grade uranium. In the waning days of the Vietnam War, the U.S. hastily shut down the reactor and pulled out the unused fuel. By the mid-1980s, the plant was operating again with Russian assistance and a new load of highly enriched uranium.

Although it does little cutting-edge research, the reactor helps train Vietnam's physicists and produces 30% of the nation's medical isotopes used in cancer treatment. It is also the pride of Vietnam's science establishment, employing a staff of 200.

But like many research reactors, security hardly meets Western standards.

At the front gate on a recent day, two young unarmed guards were on duty inside a glass-walled booth. A lone telephone sat on a desk to enable contact with a local police garrison.

Bieniawski's jaw dropped when he saw that the massive doors to the reactor containment building were held shut by a piece of old pipe jammed into the door handle. In interviews, Vietnamese officials said they didn't see any security problem.

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