

President Bush Pushes for Global Nuclear Expansion

By Peter Montague

President Bush has said many times that nuclear weapons are the greatest threat to U.S. security, particularly nuclear weapons in the hands of hostile groups, like Al Qaeda, or unstable governments.

The tight connection between nuclear weapons and nuclear power reactors is well-understood, unmistakable and unavoidable. People who want to build nuclear weapons almost always start by building a nuclear power reactor. Israel developed a nuclear arsenal starting with components and know-how provided by a nuclear power reactor. India did the same. So did India's chief rival, Pakistan. So did India's other major rival, China. So did North Korea, using reactors provided by China and by Switzerland. Iraq was building the Osiraq nuclear power reactor until 1981 when Israel blew it to smithereens to prevent the next logical step, an Iraqi A-bomb. Iran is reportedly heading down this same path now, starting with nuclear reactors provided by our ally, Russia.

Despite the clear, tight connection between nuclear power reactors and nuclear weapons, and despite the President's oft-repeated warning that the greatest threat to our national security is an atomic bomb in the wrong hands, the President is now taking very aggressive steps to expand the number of nuclear power reactors worldwide.

In February, Mr. Bush announced a major new U.S. program to sell nuclear power reactors all around the world. The President's program is called the Global Nuclear Energy Partnership (GNEP). An important first step in the GNEP is to build many more nuclear power reactors in the U.S. — a "nuclear renaissance," as it is being called in nuclear industry puff pieces.

To build more nuclear reactors in the U.S., the problem of nuclear waste disposal must be solved and the GNEP offers two ways to do this, a long term solution and a short term solution.

The problem is highly-radioactive reactor fuel. To fuel a reactor, slightly-enriched uranium is formed into pellets, which are then packed into long rods. When these rods are placed close to each other in the core of a reactor, the uranium in the rods undergoes a controlled chain reaction, producing heat plus new "fission products" that are intensely radioactive, including plutonium. Eventually these unwanted fission products "poison" the chain reaction and the fuel must be withdrawn from the reactor and replaced. The poisoned fuel rods become "high level radioactive waste" and they must be held securely for upwards of 240,000 years. Because our species, *Homo sapiens*, has only been on the planet for roughly 100,000 years, we have no experience handling long-lived, highly-dangerous problems of this nature. We are flying blind. Scientists have been working on the nuclear waste problem since 1940; however, after 66 years of intense effort, there is still no satisfactory solution in sight.

The current plan for handling these wastes is to bury them in a hole in the ground beneath the Nevada desert at a place called Yucca Mountain. Unfortunately, the Yucca Mountain waste dump has been mired in problems, including falsification of data by scientists of the U.S. Geological Survey. The Yucca Mountain dump was supposed to open in 1998, but the government now says there is no way to estimate when the site will be opened because of the many problems it has encountered. Meanwhile, the U.S. Department of Energy now acknowledges that by 2010 — four years from now — the existing nuclear power reactors in the U.S. will have produced enough high-level waste to fill the Yucca Mountain dump completely. Yucca Mountain will need to be expanded, or a second high-level waste dump will have to be built, and the government has not announced any plans for a second waste dump. Without some solution to this waste problem, nuclear power cannot readily expand in the U.S.

A group of private utilities calling itself Private Fuel Storage (PFS) has devised a solution to the high-level waste problem — "temporary" storage of up to 100 years on Goshute Indian land in Skull Valley, Utah. The Nuclear Regulatory Commission issued a license to PFS in March, but the State of Utah is not enthusiastic about the project, to put it mildly, and numerous stumbling blocks remain, preventing PFS from accepting any wastes.

So how can the domestic U.S. nuclear industry expand?

The long-term solution to the problem of irradiated reactor fuel is embodied in President Bush's GNEP plan — to develop an entirely new set of machines and processes called an "advanced fuel cycle" to "reprocess" and "recycle" the irradiated reactor fuel, and reduce the volume of waste produced by each nuclear power reactor, using complex machines ("fast reactors") and technologies that do not exist today. At a Congressional hearing on the "advanced fuel cycle" in April, members of Congress estimated that the GNEP could cost upwards of \$200 billion. "This would put GNEP in the realm of the U.S. space program in terms of long-term cost," said Representative Al Green (D-Tex.). It seems clear that Mr. Bush and his friends at General Electric and Westinghouse — the only U.S. firms that still manufacture nuclear power reactors — are serious about tapping the taxpayer in a major way to make this global business venture work for them.

Obviously an expensive and experimental program of this nature can expect to encounter significant delays (not to mention cost overruns). Even optimistic estimates have the first test machines starting to operate around 2014 to 2019, so this will not solve the growing high-level waste problem, which is already preventing the U.S. nuclear industry from expanding.

So some other short-term solution is needed.

As luck would have it, the President's GNEP provides the solution. As a first step toward implementing GNEP, President Bush announced July 8, that he has decided to permit "extensive U.S. civilian nuclear cooperation with Russia for the first time ... reversing decades of bipartisan policy," the *Washington Post* reported.

The *Post* noted that Mr. Bush had resisted such a move for years, insisting that Russia first stop building a nuclear power station for Iran near the Persian Gulf. But the administration has changed its mind, now viewing Mr. Putin, Russia's leader, as a "more constructive partner" in trying to pressure Iran to abandon plans for making A-bombs.

Now here's the important part: The *Post* pointed out that a nuclear cooperation agreement would clear the way for Russia to import and store thousands of tons of highly irradiated used nuclear fuel from U.S.-supplied reactors around the world. The *Post* says this is a critical component of Mr. Bush's plan to spread civilian nuclear energy to power-hungry countries everywhere on earth because Russia would provide a place to send the used radioactive material. Under this scenario, it doesn't matter if the long-term solution ("fast reactors" and all the rest) ever develops — Russia will become the world's permanent waste dump.

The *Post* noted that some people have criticized Russia's plan to turn itself into the world's nuclear waste dump because Russia has a miserable record of nuclear accidents and horrendous widespread contamination from nuclear wastes. Its transportation network is antiquated and inadequate for moving vast quantities of radioactive material. And the country has not fully secured the nuclear facilities it already has against theft or accidents. Not to mention that it has recently been supplying nuclear technology to Iran.

Never mind all that. The *Post* summarizes: Mr. Bush's new Global Nuclear Energy Partnership envisions promoting civilian nuclear power around the world and eventually finding a way to reprocess irradiated fuel without the danger

of leaving behind material that could be used for bombs. Until such technology is developed, Mr. Bush needs someplace to store the used fuel from overseas, and Russia is the only volunteer.

So there you have it. Mr. Bush has a grand plan for placing nuclear power reactors around the globe in every country that wants one. There used to be a major hurdle blocking such proliferation of A-plants, called the Non-Proliferation Treaty. ("Proliferation" is the official term for spreading A-bomb-making capabilities from country to country.) Countries that want nuclear power reactors used to have to sign the Non-Proliferation Treaty (NPT), promising not to make any nuclear weapons. The NPT was standing in the way of Mr. Bush's grand plan for a nuke in every country that wants one, so earlier this year he quashed the NPT with great fanfare by announcing that he was ignoring it. He signed a deal providing U.S. nuclear power technology to India — a nation that has pointedly never signed the NPT. As the *New York Times* observed, the President has turned the NPT "into Swiss cheese." In direct violation of the NPT, India will now receive nuclear fuel from the U.S., freeing India's home-made nuclear fuel for diversion into A-bombs — the very situation the NPT was designed to avoid.

So the skids are now fully greased for Mr. Bush's grand global plan for a nuke in every garage. The Non-Proliferation Treaty is effectively dead, and the problem of high-level waste has been "solved" by arranging for it all to be sent to Russia. To be sure, some details remain to be worked out, but the outlines of the President's Grand Nuclear Plan are now in place.

Only one major question remains. Why would President Bush want to spread nuclear power reactors — and thus the very real threat of nuclear weapons — around the world?

As we search for an answer to this perplexing question, rational thought fails us, so we turn instead to dark humor. On July 19, Mike Peters, the Pulitzer prize winning cartoonist for the *Dayton Daily News* ran a cartoon of three Presidential figures — Eisenhower, Nixon, and George W. Bush. The banner above the three reads, "Republican Campaign Slogans." On his chest, Mr. Eisenhower has the words, "I like Ike." Mr. Nixon's slogan is, "Four More Years." George Bush's slogan is "WW III."

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Nuclear Pipe Dreams

By John LaForge

The government's latest attempt to start a building boom in nuclear reactors, the Global Nuclear Energy Partnership (GNEP) is falling apart under the weight of real world economics, unwilling "partners" and the nuclear industry's vexing and deadly experiences with "reprocessing" — the dirty, liquid chemical bath process of breaking up waste reactor fuel into usable metals.

The heart of the GNEP proposal is a set of three experimental systems: a reprocessing factory, a "fast neutron" reactor and an exotic fuel fabrication complex. A return to reprocessing would involve a 180-degree shift in U.S. nuclear waste policy since the practice was halted in the 1970s and interest in it indicates desperation in the government's search for a way to deal with 50,000 tons of high-level radioactive trash.

Andrew Kadak, a nuclear engineer at the Massachusetts Institute of Technology, told the magazine *Technology Review* that GNEP is the fifth federal waste initiative in the last five years: 1. The Nuclear Hydrogen Initiative; 2. Nuclear Power 2010 (to erect a new reactor by that year); 3. Generation IV (test gas- and lead-cooled reactors); and 4. The Advanced Fuel Cycle Initiative, parts of which resemble 5, the GNEP.

The list of GNEP's defects and detractors that follows begins with the fact that the Department of Energy (DOE) can't sell the plan on its merits. Instead, GNEP's boosters are getting slogans and phraseology ("inherently safe," "naturally safe" and "proliferation resistant" reactors, etc.) from a professional PR firm, Potomac Communications Group, hired by the DOE at public expense. (U.S. Rep. Henry Waxman has introduced HR 5112 to rein in such lobbying abuses.)

Radiation disasters around the world (Shiprock, New Mexico; West Valley, New York; and Three Mile Island in the U.S.; Chernobyl in Ukraine; Sellafield in Britain; Monju and Tokaimura in Japan, to name a few) have made the public wary of all things nuclear. They've also taught nuclearists to use the language of shampoo salesmen: Deputy Energy Secretary Clay Sell said May 2nd, that GNEP will "make the world a better, cleaner, safer place to live" with "abundant, affordable, emissions-free energy."

Mr. Sell's "affordable" solution was estimated in April by members of Congress to approach \$200 billion. Sell's "emissions-free" energy system has, to date, emitted one-hundred-million pounds of high-level solid waste and several hundred million gallons of high-level liquid wastes left from reprocessing.

After 50 years of abject failure in its search for a container that would last even one-100th as long as the industry's poisons — 10,000 years — the DOE expects us to believe that its GNEP scheme "will convert transuranic elements

(mostly plutonium) in used fuel into shorter-lived isotopes while producing electricity." Recalling promises of "energy too cheap to meter," the realists have lined up against the GNEP.

Here's why:

* Current U.S. law forbids export of radioactive waste (GNEP's plan to internationalize reprocessing), leading Nikolai Ponomarev, the director of Russia's Kurchatov Institute, to call GNEP illegal under the Non-Proliferation Treaty.

* Last May, U.S. House appropriations committee slashed a total of \$130 million from the proposed \$250 million start-up fund after David Hobson (R-Ohio) said he had "serious ... technical and financial reservations" because the DOE had "failed to provide sufficient information" about "cost, schedule ... and waste streams."

* In a written warning to his House colleagues, Rep. Ed Markey (D-Mass.) said the "hugely expensive" reprocessing failure in West Valley, New York "processed only one year's worth of waste in six years time," produced 600,000 gallons of high-level nuclear wastes and cost \$5 billion to clean up.

* The National Academy of Sciences (NAS) reported in 1996 that the cost of cleaning up past reprocessing wastes at Hanford, Washington; Savannah River, South Carolina; and the Idaho National Laboratory will exceed \$100 billion. And, contrary to GNEP advertising, the NAS report noted that reprocessing "does not reduce the amount ... of radioactive waste."

* Even the industry's top ad agency, the Electric Power Research Institute, (EPRI) slammed the GNEP's reprocessing plan in a June report to Congress, calling it "expensive and unattractive to commercial financing." EPRI even agreed with Public Citizen (a watchdog group), Rep. Markey and the Union of Concerned Scientists that reprocessing is more expensive than storing the waste "for the foreseeable future."

* The DOE's targeted "partners" around the world sound doubtful and critical of the DOE/GNEP plan for the "fast reactor." Tests done by Britain, France and Germany in the '80s were abandoned as too costly and unworkable. Australia's PM John Howard warned, after meeting with DOE Secretary Sam Bodman in May, that the economic case for new reactors "had to be made" and he dismissed suggestions that Australia could become a magnet for other countries' nuclear waste. "I'm attracted to selling uranium ... not leas[ing] it," Howard said, rejecting the GNEP plan to "lease" reactor fuel overseas then retrieve it for reprocessing.

* This year, Russia announced it was canceling a "mixed-oxide" (MOX) fuel program — a kind of reprocessing that was to be done jointly with the U.S. — citing cost and worker

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