

# NUCLEAR ENERGY FUTURES

## Research Project Publication

### GNEP Watch: Developments in the Global Nuclear Energy Partnership

*A monthly report prepared by Miles Pomper in Washington DC for the CIGI Nuclear Energy Futures Project*

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#### Canada and South Korea Join GNEP as US Congress Scales it Back

After holding out for several months, Canada in late November 2007 joined the Bush administration's Global Nuclear Energy Partnership (GNEP). Canada's participation boosted the ranks as 19 countries gathered for the group's first steering committee meeting in December 2007 in Vienna. Nonetheless, and nearly simultaneously, the US Congress sharply scaled back the controversial program, leaving its future in some doubt.

US administration officials have claimed that the initiative, which aims to develop new nuclear technologies and new international nuclear fuel arrangements, will reduce nuclear waste and lower the risk that the anticipated growth in the use of nuclear energy worldwide could spur nuclear weapons proliferation. Critics assert that the initiative would increase the proliferation risks posed by the spread of reprocessing technology, be prohibitively expensive, and fail to significantly ease waste disposal challenges without any certainty that the claimed technologies will ever be developed. Many of these concerns have been echoed by US lawmakers.

Nonetheless, at the group's 19 December 2007 steering committee meeting, GNEP partners adopted a work plan calling for two more steering meetings in the coming year and a ministerial-level executive committee meeting late in 2008. The steering committee meetings would be timed

so that the ministerial-level gathering would be presented with the initial results of two working groups, which will be studying issues of nuclear infrastructure and reliable fuel services. The steering committee named Edward McGinnis, a US deputy assistant energy secretary, as chairman, along with vice chairmen from China, France, and Japan.

#### Canada Joins Belatedly

Canada had been invited to join the partnership in September 2007, when 15 other countries became members. But the Conservative government led by Prime Minister Stephen Harper had held off on a decision after coming under sharp criticism from Liberal Party leader Stéphane Dion, who warned that membership in GNEP would turn Canada into "a global nuclear waste garbage dump." He and other critics claimed GNEP would require Canada to take back spent fuel made from its uranium (see GNEP Watch, No. 1). Canada is the world's largest uranium exporter.

Natural Resources Minister Gary Lunn rejected that charge in remarks to the Canadian House of Commons on 30 November 2007.

"We made it unequivocally clear that we will under no circumstances ever accept any spent fuel back from any other country," Lunn said, a day after the government announced its decision to join the partnership. The dispute seems to centre on different interpretations of exactly how GNEP might turn its goal of "fuel leasing" into reality. Under this nonproliferation strategy, states that supply fresh fuel to other countries would take back

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spent fuel in order to minimize the possibility that plutonium could be separated from the fuel and used in nuclear weapons.

US Department of Energy spokeswoman Angela Hill said in an email on 25 January 2008 that the "Partnership does not necessitate any partner taking back or receiving used fuel unless it so chooses." However, she added that "Individual countries currently do take and recycle used fuel from other countries by agreement, and we expect others to consider doing this in the future."

In the past, Russia, a GNEP member, has kept both the separated plutonium and the waste from reprocessing its foreign customers' spent fuel. But it has sought to negotiate new contracts in which it would send back the waste and keep the plutonium. No foreign customer has been willing to renew on that basis. France, another GNEP member, has been willing to recycle the plutonium from its only continuing foreign customer, the Netherlands, but sends back the waste.

### Cautionary Flags

While Canada's membership in GNEP is not likely to prove controversial abroad, the new or anticipated membership of two other countries, South Korea and Turkey, is already raising some cautionary flags.

American nonproliferation experts have expressed concerns about South Korean research and development of pyroprocessing, a way to reuse spent nuclear fuel. In a December 2007 atomic energy road map paper, Seoul said that it aims to have a pilot pyroprocessing facility completed by 2012 and a semi-commercial facility in place by 2025.

The South Korean approach, called the Advanced Spent Fuel Conditioning Process (ACP), involves turning spent fuel into a metal, and dissolving it into molten salt. Using electrolysis, part of this material is then separated from some of the longest-lived fission products and reformed into a new fuel. While the resultant product also contains some significantly radioactive materials, as well as plutonium and uranium, it is not "self-protecting" by the standards of the International Atomic Energy Agency (IAEA).

The Bush administration, however, contrasts ACP with current reprocessing techniques, such as the PUREX process used in France. These processes use acid and organic solvents to separate relatively pure plutonium from other elements in the spent fuel. Administration officials say that pyroprocessing is not as prone to diversion to a nuclear weapons program as conventional spent fuel reprocessing. Those conventional methods have provided the plutonium that has been used in many of the world's nuclear explosives programs, including North Korea's. In particular, they claim that because pyroprocessing produces a fuel with some radioactive fission products it is a step above separating plutonium alone.

"Pyroprocessing is not reprocessing because it does not produce pure plutonium," one US official said in an interview on 3 January 2008. The following day another official said in an interview that the US Departments of Energy and State had formally determined both in 2002 and in 2007 that pyroprocessing should not be considered as reprocessing under US regulations, statutes, and agreements, which ban US assistance to foreign reprocessing efforts.

### About GNEP Watch

GNEP Watch reports on current developments in the Global Nuclear Energy Partnership (GNEP). GNEP is a US government-led international initiative aimed at encouraging the expansion of domestic and international nuclear energy production while working toward the reduction of proliferation and environmental risks.

### CIGI Nuclear Energy Futures Project

The Nuclear Energy Futures project investigates the implications of the purported nuclear energy revival for nuclear safety, security and nonproliferation over the coming two decades and will propose recommendations for consideration by the international community, particularly in the area of global governance.

Some independent studies, however, have concluded that the product of pyroprocessing would fall short of the IAEA self-protection standard. Moreover, outside analysts and previous US government reports have observed that although the technology itself may mark an improvement over current reprocessing methods, such a system would have other problems that could lead to weapons proliferation.

For example, they have said a pyroprocessing program would train experts in plutonium chemistry and metallurgy and the use of hot cells and other appropriate facilities that could be used to recover plutonium for weapons. The system could also be reconfigured for more standard reprocessing.

A 1992 independent study for the US Energy and State Departments noted that appropriate safeguards had yet to be designed for such facilities, and that it would be even more difficult to account for nuclear materials in them than in current reprocessing facilities. But on 4 January 2008 an Energy Department official demurred from that judgment, saying in an interview that "we don't agree that you can't safeguard that technology." The official asserted that "we are not in a position to dictate what they [South Korean officials] do" and that "we are not aiding and abetting" any problems.

South Korea has been negotiating with the United States and the IAEA over a safeguards agreement for a partially constructed, pilot pyroprocessing facility but has yet to conclude a pact. Despite regular pleas from South Korean officials at semi-annual meetings, US officials have maintained significant restrictions on Seoul's ability to test the ACP fully. They have only allowed South Korean scientists to participate on a case-by-case basis in joint pyroprocessing experiments at US laboratories. In South Korea, scientists have been restricted to using fresh fuel, which does not contain plutonium, or to the step of the process that turns spent fuel into metal, so as not to gain access to means of separating plutonium. Under a nuclear cooperation agreement between Seoul and Washington, the US must approve any use of the low-enriched uranium it supplies as fuel to South Korean nuclear reactors.

Some officials worry that South Korea's proposed development of a pyroprocessing facility could represent a setback to the 1992 denuclearization agreement between North and South Korea at a sensitive time in the effort to end North Korea's nuclear weapons program. The 1992 pact says that the two Koreas "shall not possess nuclear reprocessing and uranium enrichment facilities."

Although North Korea has broken the agreement, Seoul claims to continue to adhere to it in hopes that Pyongyang will later respect its strictures. Seoul's proposed development also takes place as Washington presses Pyongyang to follow through on a 2007 commitment to dismantle its nuclear programs.

## Broader Cautions

Moreover, South Korea's participation in GNEP adds to broader concern about whether GNEP is adhering to its initial goals.

The US administration launched GNEP in February 2006, portraying it in part as a practical application of President George W. Bush's call two years earlier to halt the spread of uranium-enrichment and spent fuel reprocessing facilities to new countries. Like spent fuel reprocessing facilities, enrichment facilities can provide either fuel for nuclear power or fissile material for nuclear weapons. Yet, a September 2007 statement of principles appeared to move away from that stance, indicating that countries joining GNEP "would not give up any rights" to enrichment or reprocessing and that the initiative intended to "develop and demonstrate, inter alia, advanced technologies for recycling spent fuel for deployment in facilities that do not separate pure plutonium" (see GNEP Watch, No. 2).

A similar potential controversy surrounding the program could involve Turkey. According to the Turkish Daily News, Turkish Energy Minister Hilmi Guler told reporters on 18 January 2007 that "we endorse remaining as an active observer [of GNEP] for some time," and would probably join in September 2008 when the next full ministerial meeting is expected to take place.

The US has pressed Turkey, Egypt, and other Middle Eastern countries that want to develop nuclear power programs to join GNEP.

Turkey has said that it hopes to build three nuclear power plants by 2015. President Bush on 22 January 2007 finally submitted to Congress a long-delayed nuclear cooperation agreement between the two countries. The agreement had been stalled for seven years as the US probed allegations that Turkish companies participated in the A.Q. Khan black market nuclear trafficking network that supplied Iran's nuclear program.

But a new controversy has threatened to erupt following unconfirmed leaks in several Turkish newspapers in January that Turkey plans to build a uranium enrichment

facility. The accuracy of the accounts is open to question, with some experts suggesting that Turkey may instead intend building a fuel-fabrication facility. The Turkish reports jibed with widespread anxiety in Washington that Iran's nuclear program could encourage Turkey and Egypt to develop capabilities that might be used in producing nuclear weapons as a hedge against Iranian ambitions.

### Congress Cuts Back

Even as GNEP was expanding abroad, it was being pared back in a fiscal year 2008 omnibus spending bill that the US Congress approved in mid-December and President Bush signed on 26 December 2007.

Opposition to GNEP in Congress was bolstered by an October 2007 report from a US National Research Council (NRC) panel, commissioned by the Energy Department, that concluded that the department should "not move forward" with the program, particularly efforts to develop new commercial-scale facilities for reprocessing and for burning a new type of nuclear fuel. Citing a lack of both urgency and appropriate technical knowledge, the NRC panel said the department should return to an earlier course in which it conducted a "less aggressive research program" (see GNEP Watch, No. 3).

The funding bill provides money for research but blocks any expenditures for constructing commercial facilities or technology demonstration projects. Rather than providing the US\$395 million President Bush had requested for the Advanced Fuel Cycle Initiative (AFCI), lawmakers allocated only US\$181 million for AFCI. GNEP accounts for nearly all AFCI funding.

By contrast, Congress authorized and appropriated US\$50 million toward the establishment of an international nuclear fuel bank under IAEA auspices. IAEA Director-General Mohamed ElBaradei and the US and other nuclear fuel producers have urged the creation of such a fuel bank in order to deter additional countries from establishing enrichment or reprocessing facilities to produce nuclear fuel. The US contribution would add to US\$300 million worth of low enriched uranium that Russia pledged for the fuel bank last year.

Russia has said that it is in the process of establishing a facility at Angarsk in Siberia, where it would maintain control of the enrichment technology but allow other countries to participate as investors. It has already signed up Kazakhstan as a participant and is in the middle of negotiating such an agreement with Armenia.

For more information on CIGI's  
Nuclear Energy Futures Project visit:

[www.cigionline.org/cigi/Research/globalse/nuclear](http://www.cigionline.org/cigi/Research/globalse/nuclear)

Chaired by CIGI Distinguished Fellow Louise Fréchette, the project is a partnership between CIGI and the Canadian Centre for Treaty Compliance (CCTC) at the Norman Paterson School of International Affairs, Carleton University, Ottawa. The project is directed by CIGI Senior Fellow and CCTC Director Trevor Findlay.

CIGI was founded in 2002 by Jim Balsillie, co-CEO of RIM (Research In Motion), and collaborates with and gratefully acknowledges support from a number of strategic partners, in particular the Government of Canada and the Government of Ontario. CIGI gratefully acknowledges the contribution of the Government of Canada to its endowment Fund. / Le CIGI a été fondé en 2002 par Jim Balsillie, co-chef de la direction de RIM (Research In Motion). Il collabore avec de nombreux partenaires stratégiques et exprime sa reconnaissance du soutien reçu de ceux-ci, notamment de l'appui reçu du gouvernement du Canada et de celui du gouvernement de l'Ontario. Le CIGI exprime sa reconnaissance envers le gouvernement du Canada pour sa contribution à son Fonds de dotation.



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