

# NUCLEAR MONITOR

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## MONITORED THIS ISSUE:

## THE END IS NEAR FOR THE PBMR

**The Pebble Bed Modular Reactor. Remember? It was globally heralded as the perfect nuclear reactor: small, safe and cheap. Dozens would be built in South Africa alone and in 1999 the company expected to sell 30 reactors annually from 2004 on. Sometimes in the public opinion about the nuclear renaissance and new reactor types the PBMR was used if it was already in operation in South Africa or at least under construction.**

(714.6071) WISE Amsterdam - Now, the South African government announced it is expected to close operations at PBMR (Pty) Ltd. finally 'within a few weeks' (that is August). The company once planned to build up to 24 165-MW high-temperature gas-cooled reactor modules for state-owned utility Eskom and export the modular HTR worldwide, but hasn't built even the demonstration model.

The government has invested an estimated South Africa Rand 9 billion (US\$1.23 billion at current rates) in PBMR Ltd. over the 11 years since it was founded as an Eskom subsidiary. PBMR Ltd. is formally owned by Eskom, the Industrial Development Corp. and Westinghouse, but they have put no equity in the company for several years.

In a July statement, the Department of Public Enterprises, which has responsibility for the PBMR company, said PBMR "has not been able to acquire additional investment in the

project since government's last funding allocation in 2007, nor has it been able to acquire an anchor customer despite revising its business model in 2008/09." The company is operating on funds that were left over from the 2007 allocation and has downsized from about 800 staff to about 25. Although the PBMR website doesn't show anything about the current situation, it says there are "no career opportunities at the moment."

The company was set up in 1999 as Pebble Bed Modular Reactor (Pty) Ltd. to develop and deploy German technology it had acquired for small HTRs with coated pebble-shaped fuel elements. Besides British Nuclear Fuels plc (BNFL), Exelon, the largest nuclear fleet operator in the US, also made an early equity investment, and the company was broadly touted as the herald of a new nuclear age for the developing world based on small reactors that could be set up quickly under various site conditions. BNFLs

Official planning in	1998	3-2007	2009
Start construction demonstration-phase	1999	2008/9	2013
Demonstration-reactor ready	2003	2012	2018
First orders *1	2004	2017	?
First electricity by first reactor	2008	2021	?

\*1 In 1998 it was expected that from 2004 on, annually 30 reactors would be ordered

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stake was transferred to Westinghouse when the latter was sold to Toshiba. But the PBMR partners never agreed on a new equity structure and the company remained the property of the South African government.

The Department of Public Enterprises believes the R9-billion spent on the PBMR project has not been lost, as the skills developed "will contribute significantly in any future nuclear programs and save the country huge

amounts of money in the process".

One of the critics, Stephen Thomas, professor of energy policy at the University of Greenwich in the UK, told the Cape Times that it was clear at least six years ago that the PBMR project was "going badly wrong. Yet the government continued to pour public money into it, indeed about 80 percent of all the money spent on the pebble bed was spent in the past six years"

Tristen Taylor, of Earthlife Africa, said "We hope that this will also mark the end of the South African government's love affair with nuclear energy and that taxpayer funds can now be spent on clean, proven and reliable forms of renewable energy".

**Sources:** Nucleonics Week, 29 July 2010 / Cape Times, 10 August 2010  
**Contact:** WISE Amsterdam

## HAUNTED BY HISTORY: NUCLEAR NEW BUILD IN BRITAIN

### Part I: Shaping the Deal

**In January 2008, Gordon Brown's cabinet formally decided to permit private businesses to build new nuclear power stations in England and Wales, the Scottish executive having already refused permission. Politically, there was nothing surprising about the news. Key decisions had been made well before 2008. Tony Blair, as Prime Minister, had declared for new nuclear as early as July 2004, trailing the Bush administration by two years. Brown himself had come out decisively in favor of new nuclear to the Confederation of British Industries in November 2007 and also to the G8.**

#### **(714.6072) East Midlands Campaign for Nuclear Disarmament -**

Institutionally a key turning point was the Energy Review, initiated by Blair in 2005 and issued by the Department of Trade and Industry in 2006. The Review revised the findings of the Department of the Environment's Energy White Paper of 2003, which had been critical of nuclear economics and concerned about the waste issue. The 2006 Review argued that new nuclear had a role to play in the future 'energy mix' in the light of the imperatives of climate change and energy security. It must, however, be run by the private sector, without subsidy, and with companies bearing the cost of decommissioning and 'their full share of long-term waste management costs'. Government, however, would provide a framework: planning procedures would be simplified and speeded up and regulative and other issues extensively consulted upon.

The Review also noted 'solutions' to the problems of inherited nuclear waste. In April 2005 after a series of scandals at the reprocessing and storage complex at Sellafield in West Cumbria and the near bankruptcy of the main nuclear

generator British Electric, a new public non-departmental body was created – the Nuclear Decommissioning Agency (NDA). The NDA took temporary charge of 19 nuclear sites, including Sellafield, the first generation Magnox power stations and Dounreay a failed experimental fast-breeder reactor in the north of Scotland. In 2003, the government also set up a Committee on Radioactive Waste Management (CoRWM) to make recommendations on the best way to manage high-level waste. Its interim recommendations had already argued for 'deep geological disposal'.

This review set the guidelines of government policy right up to the present:

- \* private enterprise (implying further privatization)
  - \* dependence on corporate decision-making and financial markets for commencing nuclear new build (and even deciding its extent)
  - \* eagerness to ease the way of the industry by changing planning laws and by other forms of support as long as they could evade the label - 'subsidy'
- Within this framework corporations and government could negotiate the details,

which, of course, were critical.

It seems likely that by January 2008, after a particularly intense period of industry lobbying, a more specific agreement was reached with leading energy companies. This included the possible underpinning of the price of carbon, financially supporting decommissioning and waste storage, and minimizing company liability in case of accidents. Also included was a plan to offer local communities public compensation, bribing them that is, for hosting waste storage facilities - and also perhaps for accepting new nuclear power stations. The actual work of decommissioning, managing the Sellafield complex and existing waste sites was to be undertaken by private consortia, who would bid to the NDA for limited term contracts, three years in the first instance. In some versions it would be the NDA that would run the waste facilities where companies could then lease space, a device that may eventually be used for the long-promised storage facility for high level wastes.

Although its supporters complained of delays, around January 2008 events

were moving quickly. In May 2007 the government had issued its Planning White Paper, which after a rapid consultation, led to a new Planning Act in November 2008. The Act created a new procedure for major infrastructural projects - like nuclear power stations and waste depositories - that centralized decision-making and limited the scope of local planning objections. A parallel Act required providers of new nuclear plants to submit a definite technical and financial plan for decommissioning. In December 2007, the Conservative Party had withdrawn its 'only in the last resort' qualifications about new nuclear, a necessary political assurance for companies and investors. The Liberal Democrats, their future coalition partners, remained opposed to new nuclear up to the May 2010 General Election. In April 2009 11 sites were officially designated for new power stations. All but two were old nuclear sites, the remaining two being in the already concentrated nuclear complex - the so-called 'Energy Coast' - of West Cumbria. As Irish press and politicians pointed out, most were on the coast of the Irish Sea, an environment already threatened by emissions from Sellafield. In December the Labour leadership of Cumbria County Council expressed interest in hosting a high-level nuclear waste dump (and in receiving compensation).

2008 saw much trading in nuclear assets as companies jockeyed for competitive positions in the newly-created market. The NDA announced the leasing to 'parent companies' or subcontractors of all the Sellafield sites, plus the sale of the government's third-share in British Energy, and even of existing stocks of plutonium and enriched uranium. In April it awarded the contract for the Drigg (Cumbria) repository for low and intermediate level waste to a multinational consortium consisting of URS Washington Division (USA), Areva (France), Studsvik (Sweden) and Serco Assurance (UK) as the 'UK Nuclear Waste Management Ltd'. In July it gave the Sellafield Licence to 'Nuclear Management Partners', an overlapping consortium of URS, Areva and Amec (UK/Canada), a deal which included a surreptitious waiver of even limited liability for accidents, a decision not properly laid

before the House of Commons. The deal included the Capenhurst uranium enrichment plant in Cheshire. In May Electricité de France (EDF) made its first bid for British Energy's power stations and, importantly, its existing sites. A deal was finally signed in September for £12.5 billion (US\$ 19.5 billion or 15.1 billion euro), with EDF planning four new reactors and selling off some sites and a 25% stake to Centrica, the parent company of British Gas. This Anglo-French deal, with the French state-owned company clearly in dominance, was foreshadowed by the signing of a grand 'nuclear alliance' between Gordon Brown and President Sarkozy during his state visit to Britain in March 2008. After Sarkozy's visit and the EDF's success, Gordon Brown could at last declare "new nuclear is becoming a reality" and even, despite a massive expatriation of assets, 'good value for the taxpayer'. The selling and buying ended with RWE planning three new reactors in Anglesey and then entering a partnership with another German energy company E.ON to build on two other sites. In October 2009 a consortium of Iberdola (Spanish owners of Scottish Power), the giant French utility company GdF, and the hitherto anti-nuclear Scottish and Southern put in a bid for a new site near Sellafield. In the last months of the Labour government Lord Mandelson as Business Secretary unveiled a major loan to Sheffield Forgemasters to aid the production of large-scale castings for nuclear plants and the funding of a nuclear research and development centre in south Yorkshire, involving Rolls Royce and Westinghouse/Toshiba.

#### **A Pause for Thought**

This movement towards new nuclear in Britain has often appeared like a juggernaut, powered by government, a business-oriented civil service, and powerful energy companies committed to the nuclear route. It has seemed unstoppable by ordinary citizens, who, except in communities which hope to benefit economically, have often remained sceptical at best. This sense of powerlessness was even shared by many anti-nuclear campaigners, at least until the last year or two.

The confident tone and 'unstoppable' momentum are, however, misleading. In

Part 2 of this outline (See Nuclear Monitor 715) it will be argued that launching new nuclear in Britain is haunted by the ill-success of past civil nuclear enterprises and by their material, economic and ideological legacies. 'Haunted' is appropriate here, for there is a constant effort to keep these negative stories out of public hearing and perhaps out of pro-nuclear consciousness. There is therefore a persistent misfit between the optimistic rhetoric and grand designs on one side and persistent 'bad news' on the other. Except in critical media, these stories are often split off and labelled 'legacy' (e.g. 'legacy waste') as though they have nothing to do with the present. History cannot be allowed to enter into official memory or future calculations, let alone seed a process of growth or learning. Actually, material and economic legacies actively impede the new project and undermine its credibility while also teaching salutary lessons about how *not* to manage our vital energy needs. This poses the question, addressed below, how was it possible for nuclear revival (however fantastic) to be pursued at all?

#### **The Fall and Rise of Nuclear Power: Some Key Conditions**

We can date the nadir of the nuclear industries to the later 1980s and 1990s. After peaks in the mid-1970s and mid-1980s, global start-ups of nuclear reactors declined rapidly to pre-boom levels by the 1990s. The suppression of knowledge about the Chernobyl disaster of April/May 1986 did not prevent the widespread growth of anti-nuclear public sentiment and a refusal by local citizens to tolerate new nuclear installations on their doorstep. Independent scientific research into long-term exposure to ionizing radiation was, and remains, very important here. At the same time the privatization of electricity generation, including nuclear, has had contradictory effects. On one side it has helped to create a powerful international corporate interest in favor of new nuclear, which can include state-owned companies (like EdF) operating in countries other than their own. Under neo-liberal globalization, privatization is often expatriation and threatens domestic political accountability. These effects are accentuated in the case of nuclear energy: once governments are

committed to this very expensive project, urgent concerns for safety, carbon reduction and energy supply make them especially susceptible to corporate pressure.

At the same time, as Schneider et al. argued in 2009, privatization rendered more evident a key truth about nuclear: that it never was economically freestanding and always relied on complex and hidden forms of subsidy. As we shall see in Part 2 there is plenty of evidence in the British case for this, often a cause for scandal. Under public ownership such profligacy can be covered by explicit subsidy or disguised by 'creative accountancy'. New nuclear now faces its sternest test – can it in fact be financed? Meanwhile, the government's bluff is called – how can subsidy be avoided?

So why did going nuclear become a major political project for New Labour politicians around 2004, only a year after being 'an unattractive option for new carbon-free generating capacity'? (2003 Energy White Paper) The new urgency of man-made climate change, together with concerns about the rising costs and unreliable supply of oil and gas have been levers for the pro-nuclear interest. In arguing their case, many pro-nuclear companies have turned very vividly green. It has become possible once more to split the 'good atom' (nuclear power saves the world!) from the 'bad atom' (1945 and the proliferation of nuclear weapons) despite their many linkages. It may also be that carbon trading and the likely long-term rise in fossil fuel prices has significantly adjusted the economic prospects of nuclear. However, given the difficulties of accurate prediction, much hangs on political conditions and what governments actually do.

New (as opposed to Old) Labour has made much of its changed relation to business. In policy terms this has meant adopting a version of neo-liberalism. New Labour's version is not quite 'Thatcherism' but Labour leaders have nurtured a governing circle uncritically accessible to people and ideas from big business. Neo-liberal theory systematically blurs the distinctions between private and public interest and provides ethical validation for what others see as corruption. New Labour

was neo-liberal but also in its own way authoritarian, minutely regulative of social life, preferring centralised direction and 'big ideas' in science and management. These features come together in a political *modus operandi* in which spin is preferred to sincerity, cosy consultations to genuine accountability, and where even parliament is bypassed. Although a House of Commons vote on new nuclear was promised in May 2008, no such vote – on the *principle* of new nuclear- was ever allowed.

This political setting enhanced the power of the nuclear interest that has always thrived on secrecy. There is evidence for intensive lobbying to secure the initial pro-nuclear decision and the enabling conditions. The energy companies and their public relations firms have led the lobbying. Industry bodies have also been important: the Nuclear Industry Association, representing, it says, 195 companies, and the Transatlantic Nuclear Energy Forum run by a former Labour MEP, who, in a not untypical career, left parliament in 2005 to become a director of AMEC (an international company carrying out high-value consultancy, engineering and project management services for the world's natural resources, nuclear, clean energy, water and environmental sectors). Trade unions with members in the industry and communities living next to existing power stations have played a part. In the weeks around January 2008 at least nine secret meetings were held at Downing Street with energy company executives. March 2008 saw a formidable spin operation launched in favour of the new deal: ministerial announcements, the Anglo-French summit, union meetings, warnings by industry leaders on the need for further easing and for haste.

The direction of policy shows clearly the effect of this influence. Those of us who were involved in the promised 'consultations' can testify to the weight of industry voices and the exclusion of critical questions. Beside, while we 'consulted' or objected, the companies often took action in advance of decisions. As early as November 2007, for instance, British Energy had applied for additional connections to the national energy grid for four of its existing nuclear sites. Similarly, by May

2007 consultants had already suggested nine sites for possible new stations, prompting purchases of neighboring land by some companies. In December 2007, despite an adverse legal judgment on the first part of the consultation process, a forced re-run and many complaints from experts and campaigners, the minister responsible could confidently announce 'we have taken account of everything they said.' The question is who were 'they'?

It has taken time for the anti-nuclear forces to mobilize and for the tangled threads of the climate change and energy debates to be unpicked a little. 2009-2010 saw the growth of more organized opposition to new nuclear, the May general election and the defeat of New Labour. It remains to be seen what kind of bargain the industry can strike with a somewhat more sceptical and probably more business-savvy coalition, dominated as it is by public school boys and millionaires. In Part II we will look more closely at the destabilizing issues: decommissioning and waste storage, financing large and indeterminate capital costs without subsidy, and the serious health questions issues posed by developments in radiation science.

**Sources** (a selection) : Newspapers: The Guardian, Independent on Sunday, Daily Telegraph; BBC Radio and TV News; UK Government White Papers and Departmental Reviews on Energy (Environment 2003, Trade and Industry 2006) on Nuclear Waste Management (2002) on Planning (2007); Hansard Parliamentary Debates; Paul Brown, *Voodoo Economics and the Doomed Nuclear Renaissance : A Research Paper* (London: Friends of the Earth n.d. [2008]); Nuclear Power in the United Kingdom 24 May 2010 [www.world-nuclear.org/info/inf84.html](http://www.world-nuclear.org/info/inf84.html) accessed 24/7/2010; Mycle Schneider, Steve Thomas, Antony Froggatt, Doug Koplow, *The World Nuclear Industry Status Report with particular emphasis on economics 2009* [www.bmu.de/files/english/pdf/application/pdf/welt\\_statusbericht\\_atomindustrie\\_0908\\_en\\_bf.pdf](http://www.bmu.de/files/english/pdf/application/pdf/welt_statusbericht_atomindustrie_0908_en_bf.pdf) accessed 24/7/2010.

**Contact:** Richard Johnson, Chair East Midlands Campaign for Nuclear Disarmament.



# EU AGREEMENT ON ITER COST OVERRUNS

Four years ago, the EU, Russia, China, India, Japan, Korea and the US picked Cadarache in the south of France as the location for the experimental nuclear fusion reactor, Iter. But since the science of how to achieve this type of fusion hasn't been settled (to put it mildly), the plans for the Iter project have been the subject of several revisions in recent years, each one leading to an increased price tag. Even opponents from within the scientific world are becoming more vocal to end the project.

**(714.6073) WISE Amsterdam** - Delegates at an extraordinary meeting of the Iter Council on July 28 also agreed a timeline that would see the first plasma experiments in 2019, with a fusion reactor generating significantly more power than it consumed (for a few minutes) by March 2027. But the Iter organisation was encouraged to explore ways to bring this deuterium-tritium operation forward to 2026. After research and development at Iter it should be possible to build a demonstration fusion power plant around 2030.

Coupled with the increases in costs for raw materials like steel and cement, the budget for the project has spiralled from around 5 billion euros to about 16 billion euros.

Delegates agreed that the overall costs of the project will be almost US\$21 billion (16 billion euros), some three

times the original price. Europe is paying 45% of the construction costs, while the other participants (China, India, Japan, South Korea, Russia and the USA) are paying 9% each.

Additional construction funds will have to come from within the EU's budget. The extra 1.4 billion euros will cover a shortfall in building costs in 2012-13. The EU has agreed to meet a critical short term shortfall of those 1.4 billion euros by using money that has been allocated to other research programmes. But the EU has said it will cap its overall contribution to Iter at 6.6 billion euros, leaving the fusion project to find cuts in costs of around 600 million euros.

In Europe, some scientists are unhappy with the EU proposal to take funds from unspent budgets to bail Iter out. In France, a group of physicists - including

Nobel prize winner Georges Charpak - have written a letter to the press calling Iter a catastrophe and arguing that it should be shut down. They suggest that making up the shortfall in Iter's budget is costing France alone the equivalent of 20 years investment in physics and biology. According to one of the signatories, Professor Jacques Treiner from Paris University, it was time to call a halt to Iter before any more money was spent. "At a certain point especially when they say they will take money from other fields to fund this one you have to say, really a clear answer and the answer is no, don't do that."

More on the technical problems of nuclear fusion: *Fusion Illusions*, Nuclear Monitor 698, 27 November 2009

**Sources:** BBC, 28 July 2010 / World Nuclear News, 29 July 2010

# PLUTONIUM IN BREATHABLE FORM FOUND NEAR ROCKY FLATS

Activists questioning the thoroughness of the cleanup at the old Rocky Flats nuclear weapons plant northwest of Denver say they have found particles of weapons-grade plutonium in air samples taken near the site. Part of the site is a national wildlife refuge that is slated to open for public recreation.

**(714.6074) Rocky Mountain Peace & Justice Center** - The federal Department of Energy declared in 2005 that its decontamination of the Rocky Flats facility was complete, after a 10-year effort that cost US\$7 billion (although the DOE originally thought the project would take 65 years and US\$37 billion). The U.S. Fish and Wildlife Service is planning to allow public recreation at a national wildlife refuge established in 2007 on part of the site.

The samples were collected in April by the Rocky Mountain Peace and Justice Center, which has criticized the quality

of the cleanup and called for increased testing and other safeguards. Plutonium in breathable form was found at two locations near the site of the Rocky Flats nuclear bomb plant. Their sampling effort responded to repeated refusals of government agencies to sample surface dust at Rocky Flats for plutonium content. What the citizens found with their unofficial project counters U.S. Fish & Wildlife Service plans to open a big portion of the Rocky Flats site - the Rocky Flats National Wildlife Refuge - to public recreation.

The plutonium contained in a sample collected in open space across the street from the Rocky Flats site was delivered by wind to this location. "The Rocky Flats National Wildlife Refuge should be managed as open space that is closed to the public," Colorado state Rep. Wes McKinley told AOL News. "This is not a good place for our school kids to go on field trips. At the very least, there should be a warning that you may be exposing yourself to plutonium." "The plutonium found at the open space location was probably deposited there quite recently," observed

environmentalist LeRoy Moore, who organized the sampling project. "Burrowing animals on the site bring buried plutonium to the surface, and the winds that scour Rocky Flats scatter plutonium particles near and far, with the risk of sending some of it into the lungs of people using Rocky Flats for recreation."

At least equally significant, according to Moore, is the indoor sample. Hot particles with high concentrations of plutonium were found in dust collected in a crawl space under a house where it had accumulated for 50 years. Specialist Marco Kaltfofen of the Boston Chemical Data Corp., who did the technical analysis of the samples, pointed out that this plutonium laden

dust certainly endangered the health of anyone who spent much time in this crawl space.

Moore thinks that within the contaminated area plutonium-laden dust could be present in any indoor space where dust collects, such as in refrigerator coils, ventilation systems, ceiling fans, etc. "Its presence poses a risk to people who occupy, use or work in these indoor spaces," he stated. "So far as I know, sampling indoor dust for its possible plutonium content has never been previously done in offsite areas around Rocky Flats."

Kaltfofen pointed out that the plutonium present in the two samples was in the form of very tiny particles. Such

particles can be inhaled, ingested or taken into the body through an open wound, such as a child's scraped knee or elbow. For as long as the plutonium is lodged in the body, it continues to bombard surrounding tissue with radiation. This may result in cancer, harm to the immune system or genetic defects that can be passed on to future generations.

"This small sampling project," Moore observed, "indicates that Rocky Flats is a local hazard forever."

**Sources:** Pressconference RMPJC, 4 August 2010 / AOL News, 4 August,

**Contact:** LeRoy Moore, PhD, environmentalist and consultant with the Rocky Mountain Peace & Justice Center,

## RUSSIAN GREENS FIGHT PUTIN'S PLAN FOR FLOATING NPPs

**Russia has embarked on a scheme to building floating nuclear power plants to be moored off its coasts -especially off northern and eastern Russia- and sold to nations around the world. "Absolutely safe," Sergei Kiriyenko, director general of Rosatom, the Russian state nuclear energy corporation, told Reuters as the barge that is to serve as the base for the first floating plant was launched recently in St. Petersburg**

**(714.6075) Karl Grossman** - However, David Lochbaum, senior safety engineer at the Union of Concerned Scientists, describes an accident at a floating nuclear power plant as "worse" than at a land-based plant. "In a meltdown, a China syndrome accident, the molten mass of what had been the core would burrow into the ground and some of the radioactive material held there. But with a floating nuclear plant, all the molten mass would drop into the water and there would be a steam explosion and the release of a tremendous amount of energy and radioactive material. It would be like a bomb going off," said Lochbaum, director of the Nuclear Safety Project at Washington-based UCS.

"With a floating nuclear plant you have a mechanism to significantly increase the amount of radioactive material going into the environment," said Lochbaum, who worked 18 years as an engineer in the nuclear industry and also for the U.S. Nuclear Regulatory Commission. A large plume of radioactive poisons would be formed

and "many more people would be put in harm's way." Further, there would be radioactive pollution of the sea, he noted.

Nuclear experts in Europe -including in Russia- are as critical as Lochbaum is about floating nuclear power plants and their unique accident potential. Other issues raised include the floating plants being sources of fuel for nuclear weapons and easy targets for terrorists.

"This project is clearly a risky venture," said Alexander Nitikin, a former chief engineer on nuclear-powered submarines of the Soviet Union and senior inspector for the Nuclear and Radiation Safety Inspection Department for its Department of Defense. He is now head of the St. Petersburg branch of the Bellona Foundation, an international environmental organization. "Safety shouldn't be neglected for the profits Rosatom wants to get from selling floating nuclear power plants to the troubled regions. Such Rosatom activities simply violate the idea of non-proliferation."

The floating nuclear plants would use a far more volatile fuel compared to land-based plants: weapons-grade uranium containing 40 percent Uranium-235. The U-235 enrichment level in land-based plants is 3 percent. Each would include two reactors providing a total of 70 megawatts of electricity.

A press release by Rosatom issued with the June 30th launch of the football field-sized barge at St. Petersburg said "there are many countries, including in the developing world, showing interest" in the plants.

*The Times of London* has reported countries interested in buying them include China, Indonesia, Malaysia, Algeria and Argentina ("Floating Nuclear Power Stations Raise Spectre of Chernobyl at Sea.") *World Nuclear News* in its article added Namibia and Cape Verde to the list

The notion of a floating nuclear power plant being pursued by Russia originated in the United States where it

was scuttled because of excessive cost, public opposition and lack of energy need. Public Service Electric and Gas Co. of New Jersey, in its literature, has related that while taking a shower in 1969 the idea of floating nuclear plants came to its vice president for engineering and construction, Richard Eckert. In the shower, Eckert thought that the sea could supply the mammoth amounts of water nuclear plants need as coolant.

PSE&G convinced Westinghouse Electric Co. to build such plants. In 1970, Westinghouse and Tenneco set up Offshore Power Systems to fabricate them at a facility it built on Blount Island off Jacksonville, Florida. The plants were to be towed into position with the first four moored 1.8 miles off Little Egg Harbor, New Jersey, 11 miles northeast of Atlantic City. Costs skyrocketed, there were protests—in both Jacksonville and New Jersey as well as national opposition. And because of the

1973 oil crisis energy conservation reduced PSE&G's need for more power. In 1984, Offshore Power Systems cancelled the undertaking and dissolved after spending \$180 million on the failed venture.

**Source:** An extended version of this article by Karl Grossman was first published in CounterPunch, 27 July 2010.

## ANALYSIS TRIPLES U.S. PLUTONIUM WASTE FIGURES

**The amount of plutonium buried at the Hanford Nuclear Reservation in Washington State is nearly three times what the federal government previously reported, a new analysis indicates, suggesting that a cleanup to protect future generations will be far more challenging than planners had assumed.**

**(714.6076) WISE Amsterdam** - Plutonium waste is much more prevalent around nuclear weapons sites nationwide than the Energy Department's (DOE) official accounting indicates, but the problem is most severe at Hanford, a 560-square-mile tract in south-central Washington that was taken over by the federal government as part of the Manhattan Project

The plutonium does not pose a major radiation hazard now, largely because it is, according to DOE, under "institutional controls" like guards, weapons and gates. But because it takes 24,000 years to lose half its radioactivity, it is certain to last longer than the controls and the gates. The fear is that in a few hundred years, the plutonium could reach an underground area called the saturated zone, where water flows, and from there enter the Columbia River. Because the area is now arid, contaminants move extremely slowly, but over the millennia the climate is expected to change, experts say.

The finding on the extent of plutonium waste signals that the cleanup, still in its early stages, will be more complex, perhaps requiring technologies that do not yet exist. But more than 20 years after the Energy Department vowed to embark on a cleanup, it still has not

"characterized," or determined the exact nature of, the contaminated soil.

In 1996, the department released an official inventory of plutonium production and disposal. But Mr. Alvarez analyzed later Energy Department reports and concluded that there was substantially more plutonium in waste tanks and in the environment. The biggest issue is the amount of plutonium that has leaked from the tanks, was intentionally dumped in the dirt or was pumped into the ground.

Gerry Pollet, executive director of the environmental group Heart of America

Northwest, said the government should embrace a cleanup plan that assures that even thousands of years into the future, an unsuspecting public will not be overexposed. "What is reasonably foreseeable is that there are people who will be drinking the water in the ground at Hanford at some point in the next few hundred years," Mr. Pollet said. "We're going to be killing people, pure and simple."

The new analysis indicates that the chemical plutonium separation process was not nearly as efficient as the government claimed and that a lot of the plutonium was left behind in various stages. It also suggests that estimates of plutonium production by the Energy Department and its predecessors, including the Atomic Energy Commission and the Manhattan Project, were not nearly as accurate as scientists and bureaucrats said they were.

**Sources:** Plutonium Wastes from the U.S. Nuclear Weapons Complex by Robert Alvarez, Senior Scholar, Institute for Policy Studies, Washington, D.C. July 7, 2010; available at: <http://djcoregon.com/wp-files/pdfs/alvarez-plutonium-wastes-07-12-10.pdf> / New York Times, 11 July 2010  
**Contact:** Heart of America Northwest  
Web: <http://www.loanw.org>

A preliminary estimate based on waste characterization data indicates that from 1944 to 2009 about 12.7 metric tons of plutonium was discarded at U.S. nuclear weapon production facilities. This is more than three times than the U.S. Department of Energy's (DOE) last official estimate of waste losses (3.4 tons) made in 1996. Of the 12.7 tons, about:

- \* 2.7 tons in high-level radioactive wastes are stored as liquids in tanks and as granulated material in bins on the sites of former U.S. military reprocessing plants;
- \* 7.9 tons are in solid waste, which DOE plans to dispose at the Waste Isolation Pilot Project (WIPP) a geological repository in New Mexico for transuranic wastes. About half is already emplaced; and
- \* 2.1 tons are in solid and liquid wastes buried in soil prior to 1970 or held up in facilities at several DOE sites. The DOE considers most of this plutonium to be permanently disposed.

# U.S. NUCLEAR “RENAISSANCE” HITS A STUMBLING BLOCK CALLED REALITY

**The much-hyped nuclear “renaissance” in the U.S. has run squarely into a stumbling block called reality, and at the moment at least, reality is winning. In retrospect, it may be that the peak of the renaissance occurred in October 2008, when the Nuclear Regulatory Commission announced that it had either received or was expecting by the end of 2010 23 license applications for 34 new reactors. But by June of this year, the number was down to 17 applications covering 26 new reactors, with no more applications expected during 2010.**

**(714.6077) NIRS** - In July, Exelon, the nation’s largest nuclear utility, became the first to formally withdraw an application, doing so for two proposed reactors at Victoria, Texas. Four of the other applications (for four new reactors) have not been formally withdrawn, but there is no work being done on them and they are all but cancelled. Every proposed reactor project has been delayed from its original schedule and at this point none has a firm date to even receive a construction/operating license, much less a date when construction actually could begin.

Two of the applicants (UniStar Nuclear’s Calvert Cliffs-3 and NRG Energy’s two-unit South Texas Project) generally considered furthest along in the process (and on the Department of Energy’s “shortlist” for taxpayer loans) announced in July that they have slashed spending on their projects, and warned that if they don’t receive taxpayer loans soon, the reactors will be cancelled. The problem for them is that currently there is only enough money in the loan guarantee pot to cover one of the projects—not both.

The factors causing their problems are not unique to them, they are industry-wide: declining natural gas prices projected to remain low for the foreseeable future; declining electrical demand due to the prolonged recession and the impact of state energy efficiency programs; the increasing competitiveness of renewable energy technologies; soaring construction cost estimates for new reactors; and revelations of safety-related design deficiencies that are delaying reactor design certifications—a prerequisite for obtaining a construction/operating license.

In the Calvert Cliffs case, the situation is

so bleak that UniStar partner Electricite de France in July took a 1 billion Euro provision for anticipated losses from its US\$6.5 billion (5.05 billion euro) investment in Constellation Energy’s existing reactors and in UniStar (Constellation is the other partner in UniStar). And pressure is growing among Constellation shareholders and investors to drop the Calvert Cliffs project and UniStar entirely. An analyst with Macquarie (USA) Equities Research flat out said “we are not happy” about the possibility of UniStar receiving a taxpayer loan guarantee and proceeding with Calvert Cliffs-3, citing the project’s “questionable economics.” Macquarie downgraded Constellation’s rating on July 29. Meanwhile, Constellation executives admitted in July that they are not sure they will proceed with the reactor even if they do receive taxpayer loans. (For an analysis of the Calvert Cliffs situation, see: <http://www.dailykos.com/storyonly/2010/8/5/889695/-The-nuclear-renaissance-stalls-with-pending-collapse-of-Calvert-Cliffs>).

The news from Congress hasn’t been much better for the nuclear industry so far this year either. The year began with a strong endorsement of nuclear power by President Obama, a request for an additional US\$36 billion (29.5 bn euro) in taxpayer loan authority by the administration, and announcement of the first loan guarantee—for US\$8.3 billion—for the Vogtle reactor project in Georgia. All of that happened in February, and the industry was both delighted and hatched plans to try to get even more from Congress.

As it has turned out, however, the industry has received nothing from Congress. While the House of Representatives voted to provide US\$9 billion in new loan authority (on an unrelated emergen-

cy funding bill), the Senate rejected the plan. That money would have allowed immediate support for both the Calvert Cliffs and South Texas projects.

And while the House Appropriations Committee has approved US\$25 billion in new loan money, the Senate Appropriations Committee has approved only US\$10 billion. But it isn’t clear at this point whether an energy appropriations bill will even be passed at all this year.

Meanwhile, the nuclear industry was pinning its biggest hopes on the Kerry-Lieberman American Power Act—the Senate’s climate change bill. That bill would not only have included the US\$36 billion in loans requested by President Obama, it also would have provided tens of billions more in tax breaks and other subsidies for the industry, while further cutting regulations and making it even harder for the public to participate meaningfully in the reactor licensing process. Indeed, the bill was so larded with goodies for the nuclear industry that even many organizations that support strong climate action couldn’t support the bill.

The industry also wanted a Senate Energy Committee-passed bill that would establish a Clean Energy Deployment Administration with the power to grant unlimited loan guarantees for new reactor construction. That likely would have been added to the American Power Act.

It was the industry’s hope—and the Nuclear Energy Institute was among the most prominent supporters of the bill—that the Senate would pass the American Power Act and then steamroll the House, which passed the Waxman-Markey climate bill last year that contained little for the nuclear industry.



But the Senate proved unable to deal with the climate issue at all (which is a different and very large problem), and the bill never even came to the Senate floor for consideration. Even an attempt by Senate Majority Leader Harry Reid to bring a much more modest energy bill, focused on some energy efficiency programs and liability for offshore oil spills in the wake of the BP disaster, didn't receive enough support to be considered by the Senate.

With only about three weeks left in the legislative session because of the Fall elections, it is unlikely Congress will have time, or inclination, to enact anything of major benefit for the nuclear industry. It does remain quite possible that some new loan authority will be

granted—probably something between US\$10 and US\$25 billion, but that isn't enough to support a nuclear renaissance.

### **Report: no new nuclear without subsidies in UK.**

Britain's new generation of nuclear power stations will not be built if the Government persists with a promise to refuse them any taxpayer support, according to a KPMG report. The study, commissioned by RWE npower, says it is still uneconomic for utility companies to invest billions of pounds in nuclear power. The Government has offered to impose a minimum price on carbon permits, which would raise the cost of fossil fuel generation and make low-carbon nuclear more attractive. But it has made a promise not to offer any direct subsidies. According to the KPMG's report a carbon "floor price" is not enough for the big utilities to commit large capital investments to the nuclear sector.

**Sunday Telegraph (UK), 18 July 2010**

Indeed, as Congress is learning the hard way, that wouldn't fund much at all. Back in 2007 -just three years ago- Congress thought the initial US\$18.5 billion in loan guarantee authority it approved would cover 6 reactor projects. Now it is clear that will only cover two. Doubling that would only mean two more, and few, if any, reactors can be built without the loans.

The industry has gone from 34 proposed new reactors to between 4-6 potentially viable projects in only two years, and even those are in jeopardy. This is a nuclear renaissance?

**Source and contact:** Michael Mariotte at NIRS

## **IN BRIEF**

**Flamanville-3 two years behind schedule.** The construction of the second EPR at Flamanville (France) faces the same problems as the first in Olkiluoto (Finland). Flamanville-3 is now two years behind schedule and at least 1 billion euro (US\$ 1.3 billion) over budget, EDF Group announced on 30 July. The company said "the target for beginning marketable output" from the French utility's first Areva EPR "is now set at 2014, with construction costs now re-estimated at around 5 billion euro. The original date for operation was June 2012 and the most recent cost estimate was 4 billion euro, although the original estimate was 3.3 billion euro. The delay at Flamanville-3 was confirmed as part of the release of information on EDF's first-half 2010 financial results. EDF reported that first-half net income of 1.659 billion euro was down 46.9% from 3.123 billion the same time last year. First-half 2010 earnings before interest and taxes were 5.289 billion euro, down from 6.784 billion in first-half 2009, although revenues rose, EDF said.

**Nucleonics Week, 5 August 2010**

**Canada: contaminated turbines to Sweden?** Bruce Power plans to ship 16 radioactive steam generators through the Great Lakes and the Saint Lawrence River, and across the Atlantic Ocean to Sweden, later this year. Each generator weighs 110 metric tons and contains over 50 trillion becquerels of long-lived man-made radioactive materials, including five isotopes of plutonium. In Sweden, Studsvik plans to melt up to 90 percent of the radiation-laced metal and sell it as 'clean' scrap intended for unrestricted use. In this way, some of the radioactivity will be dispersed into the air (atmospheric emissions), some will be dispersed into the Baltic Sea (liquid effluents), and some will be incorporated into consumer products of all kinds -- razor blades, hair dryers, paper clips, you name it. The remaining 10 percent will be shipped back to Bruce Power for storage as radioactive waste. Bowing to public pressure, the Canadian Nuclear Safety Commission recently agreed to a one-day public hearing in Ottawa on September 29 on this issue.

**Gordon Edwards, CCNR, 6 August 2010 / Press release Great Lakes United, 18 August 2010**

**China: Criticality for fast reactor.** The Chinese Experimental Fast Reactor (CEFR) achieved sustained fission for the first time on July 21, according to the owner the China Institute of Atomic Energy (CIAE). The reactor will go on to reach a thermal capacity of 60 MW and produce 20 MW in electrical power for the grid. The first sodium-cooled fast reactor in the country, it was built by Russia's OKBM Afrikantov in collaboration with OKB Gidropress, NIKIET and Kurchatov Institute. Beyond this pilot plant, China once planned a 600 MWe commercial scale version by 2020 and a 1500 MWe version in 2030 but these ambitious ideas have been overtaken by the import of ready-developed Russian designs. In October last year an agreement was signed by CIAE and China Nuclear Energy Industry Corporation (CNEIC) with AtomStroyExport to start pre-project and design works for a commercial nuclear power plant with two BN-800 reactors with construction to start in August 2011, probably at a coastal site.

**World Nuclear News, 22 July 2010**

## Global Day of Action on Radioactive Waste.

US groups are calling for a radioactive waste action day on September 29, and would like it to be an international day of action! Aim is to push-back on new proposals that would expand radioactive waste production in both the civilian and military sectors

September 29 is the anniversary date for the worst radioactive waste accident (that we know of). In 1957 a tank of liquid, highly radioactive waste left from reprocessing nuclear fuel, exploded in a region of the Soviet Union called Kyshtym in the Ural Mountains of Siberia. The accident was kept secret for several decades, but we now know that it was at a secret nuclear reprocessing site called Mayak. This accident resulted in a regional disaster and a radioactive cloud that contaminated more than 300 square miles...many people received very high radiation exposures, some suffered acute radiation syndrome. Because of secrecy in the nuclear establishment it is not clear what exactly happened but estimates are at least 200 people died of "excess" cancer and scores of villages and towns were permanently abandoned due to the severe radioactive contamination.

Please sign up if you plan to participate so we can have a "master list" of coordinated action – and we can send you any materials we generate...

**Contact:** Mary Olson, Nuclear Information and Resource Service Southeast Office, PO Box 7586, Asheville, North Carolina 28802 USA.

Mail: [maryo@nirs.org](mailto:maryo@nirs.org)

Or: Kevin Kamps, Radioactive Waste Watchdog, Beyond Nuclear, 6930 Carroll Avenue, Suite 400, Takoma Park, Maryland 20912, USA

Mail: [kevin@beyondnuclear.org](mailto:kevin@beyondnuclear.org)

**Funny. Or not...?** From a local Cumbrian (U.K.) newspaper: "The issue of councilors declaring an interest during debates about the nuclear industry is again causing concern due to the amount of time it takes. At August 17th full council meeting at Millom, numerous members of Copeland Council were obliged to stand and declare a prejudicial interest in an agenda item about nuclear new builds. Coun Henry Wormstrup, who has become increasingly frustrated by the practice, said the current system needed reform due to the number of councilors employed by or linked to the industry."

**Whitehaven News, 18 August 2010**

**Danger of tritium underestimated.** The health risks of tritium may be undervalued because its possible damage to DNA may lead to genetic mutations, says an expert who participated in a White Paper published by the French Institute of Radiation Protection and Nuclear Monitoring (IRSN) on nuclear safety. This radioactive isotope of hydrogen was released in the past by atmospheric testing of atomic weapons and is now produced by nuclear reactors and the reprocessing of nuclear fuels. Its radiotoxicity is low and the impact of its waste, gaseous or liquid, is considered unimportant. However, the IRSN is calling for "further studies" including on "possible hereditary effects". The IRSN added that further research was necessary which was "representative of the actual conditions of exposure."

**Le Monde (Fra.) 8 July 2010**

**Any plutonium in the basement?** In Tbilisi, the capital of the former Soviet Republic Georgia, a container with plutonium was found at a depot of the now defunct Isotope Institute. The plutonium had not been registered with any state entity. Employees of the former institute told the Georgian Public Broadcaster that they had no idea that plutonium was stored at the depot. The plutonium-beryllium was discovered inside a "special container stored in wax and lead, which was quite safe and presented no danger for the environment," according to Giorgi Nabakhtiani, a nuclear expert with Georgia's Environmental Protection and Natural Resources Ministry.

"Georgia plans to inform the International Atomic Energy Agency about the unregistered plutonium." Not mentioned is how many plutonium is in the container, although Nabakhtiani said that the laboratory did not contain enough plutonium-beryllium for use in a radiological "dirty bomb."

<http://en.trend.az/news/politics/foreign/1728373.html>; 30 July 2010 / Bloomberg, 2 August 2010

Oops!

In the article 'Has Sweden learned to love nuclear power?' (713.6068) we wrote in the last section that the Center Party has "two key Cabinet posts: Industry and Energy". "Energy" should be "Environment".  
Our apologies.

## WISE/NIRS NUCLEAR MONITOR

The Nuclear Information & Resource Service was founded in 1978 and is based in Washington, US. The World Information Service on Energy was set up in the same year and houses in Amsterdam, Netherlands. NIRS and WISE Amsterdam joined forces in 2000, creating a worldwide network of information and resource centers for citizens and environmental organizations concerned about nuclear power, radioactive waste, radiation, and sustainable energy issues.

The WISE/NIRS Nuclear Monitor publishes international information in English 20 times a year. A Spanish translation of this newsletter is available on the WISE Amsterdam website ([www.antenna.nl/wise/esp](http://www.antenna.nl/wise/esp)). A Russian version is published by WISE Russia and a Ukrainian version is published by WISE Ukraine. The WISE/NIRS Nuclear Monitor can be obtained both on paper and in an email version (pdf format). Old issues are (after two months) available through the WISE Amsterdam homepage: [www.antenna.nl/wise](http://www.antenna.nl/wise).

Receiving the WISE/NIRS Nuclear Monitor

US and Canada based readers should contact NIRS for details of how to receive the Nuclear Monitor (address see page 11). Others receive the Nuclear Monitor through WISE Amsterdam.

For individuals and NGOs we ask a minimum annual donation of 100 Euros (50 Euros for the email version). Institutions and industry should contact us for details of subscription prices.

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