

# NUCLEAR MONITOR

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## MONITORED THIS ISSUE:

## VERMONT SENATE SHOCKS INDUSTRY WITH 26-4 VOTE TO CLOSE VERMONT YANKEE

In a move that sent shock waves through the nuclear power industry, the Vermont State Senate voted overwhelmingly February 24 to close the Vermont Yankee reactor when its current operating license expires in 2012. Coming just a week after President Obama's announcement of an US\$8.3 billion loan for construction of two new reactors in Georgia, the 26-4 vote carried a message -bolstered later by two new public opinion polls- that the public is not sold on the notion that nuclear power is either safe or clean.

(705.6021) NIRS - The Vermont Senate vote followed weeks of revelations about growing radioactive tritium leaks at the site -culminating in a February 6 measurement of 2.45 million picocuries per liter of water, nearly the amount found in reactor process water. Federal limits of tritium concentrations in drinking water -often criticized as far too lax- are 20,000 picocuries per liter. At this point, Vermont Yankee's owner, Entergy Corp., says that the tritium contamination has not migrated offsite.

But Entergy's claims are taken with a grain of salt, since another major factor in Vermont's disillusionment with Vermont Yankee was the fact that Entergy officials had told the legislature last summer that there were no buried pipes at all on the site. In fact, it was exactly such a buried pipe found to be leaking the tritium.

And Entergy, which is in the process of attempting to put all of its nuclear reactors into a new limited liability holding company called Enexus, also lost points with Vermont lawmakers because the reactor's decommissioning

fund is far short of what is needed, and Entergy's plans to add to the fund rely solely on running the reactor as long and hard as it can. But lawmakers pointed out that Enexus would be undercapitalized, would more likely take money out of the decommissioning fund than put it in, and that it appeared the entire corporate structure of Enexus is to keep Entergy from being liable for future decommissioning obligations.

Already, Vermont's action has caused New York State regulators, where Entergy owns the Indian Point reactors, to consider placing new restrictions on Enexus, perhaps forcing Enexus to drop Vermont Yankee from its holdings and possibly even scuttling the deal entirely. The State is currently involved in litigation before the Nuclear Regulatory Commission and asking for a denial of Indian Point's request for a license extension.

Still, nuclear power issues drag on and on, and Vermont Yankee is no exception, despite the surprising margin of the Senate vote. The reactor is licensed until 2012, and Entergy says it plans to

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continue operating it until then. State legislative elections will be held this November, and Entergy is clearly hoping that if it can clean up its act a little -and it has fired or reassigned several top Vermont Yankee officials- it can reverse the vote in a new legislature next year.

Even if that doesn't work, Entergy may try to challenge the vote on pre-emption grounds. In the U.S., the federal government has sole authority over all safety and radiation issues -the states cannot close, or prevent construction of- a reactor for those reasons. But it also clear that the states do have the power to regulate on economic grounds, as well as lack of access to a radioactive waste site, which is the basis for several state laws prohibiting new reactor construction. And indeed, while the radioactive tritium releases sparked growing public opposition to the reactor (which in Vermont is overwhelmingly in favor of shutdown), the vote was based on reliability and economic issues, especially related to the decommissioning shortfall.

Vermont was already in a unique situation, in that the state had negotiated a deal with Entergy some years back that it would have the power to approve or deny a license renewal for the reactor. Although that

deal was in contract form, rather than legislative, it appears likely that deal will hold up in court if necessary.

### **Legislatures in West Virginia and Arizona defeat pro-nuclear measures.**

West Virginia's official ban on the construction of nuclear power plants is staying put. A bill to repeal that state's ban on new nuclear construction was defeated in the state legislature on February 25. Although the bill had already passed the Senate's Energy and Mining Committee, it received only one vote in the Senate Judiciary Committee and is now dead for the year.

On the same day in Arizona, a bill to classify nuclear power as renewable energy was withdrawn following heavy lobbying from the solar power industry and environmental community.

**Democracy in Action.org. 25 February 2020**

At this point, Entergy is still seeking a 20-year license extension from the NRC, and the agency seems likely to grant it despite the tritium leaks and other problems with the reactor (in 2007, for example, a cooling tower simply collapsed due to inadequate maintenance). But the state still could find itself defending its position in court if Entergy chooses to do so, and could be in the awkward position of seeking to close a reactor that the NRC has agreed to relicense.

Grassroots groups are well aware of the potential pitfalls ahead, and are continuing their efforts to assure this

victory is not overturned. Two groups, the Conservation Law Foundation and New England Coalition, already have petitioned to close the reactor now and not wait until 2012.

Meanwhile, two new public opinion polls released in March indicate that a nuclear revival is not as popular as some politicians seem to believe. A UPI poll found that new reactor construction is supported by less than a majority (48%) of the public, although only 31% were listed as opposed -the rest didn't know. But that same poll found that more than 70% of the public is concerned about nuclear accidents and routine radiation releases from reactors, and nearly 80% is concerned about radioactive waste. A Pew poll found 52% support new

reactors with 41% opposed, but that was still the least popular choice for new energy development -behind even offshore oil drilling. The vast majority -by a 78-17% margin- support renewable energy and energy efficiency development, just as the public has for the past two decades. While nuclear power remains controversial and highly divisive, genuinely safe, clean, sustainable energy has retains vast support. Are you listening, Mr. President?

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

## **NUCLEAR BRAVO'S 56TH BIRTHDAY AND ITS RADIOACTIVE LEGACY**

**March 1 is a national holiday that recognizes Nuclear Victims Day in the Marshall Islands. This year, which marks the 25th year since Rongelap Islanders' self-evacuated their radioactive islands, islanders are facing a U.S. ultimatum: move back to Rongelap in 2011 or face cutoff of funding support for the "temporary" community at Mejatto Island in Kwajalein Atoll, where about 400 islanders have lived since their 1985 evacuation. But not everybody is convinced that the Rongelap atoll is safe for human settlement, according to a lively discussion on the forum of the 'Everything Marshall Island' website [www.yokwe.net](http://www.yokwe.net)**

(705.6022) Glenn Alcalay, a former Peace Corps volunteer on Utrik in the Marshall Islands, now an adjunct professor of anthropology at Montclair State University in New Jersey, USA, has studied the impact of U.S. Cold

War nuclear testing in the Marshall Islands. In the following article, he relates the story of the BRAVO H-bomb test and its aftermath:

John Anjain, then-mayor of Rongelap

Atoll in the Marshall Islands, told me in 1981 how a man working with the Atomic Energy Commission in February 1954 stuck out the tip of his index finger - about a half-inch - and said, "John, your life is about that long."

When asked what he meant, the AEC man explained that they were about to explode a big bomb at Bikini. John inquired why they were not evacuating the people of Rongelap [130 miles away] beforehand as they had done for a series of A-bomb tests at Bikini in 1946, and was told that "they had not gotten word from Washington to evacuate the people."

On March 1, 1954 the sky over Bikini was obliterated by the thunderous force of the "Bravo" H-bomb, cracking the balmy sky and raining gritty radioactive ash - what the Marshallese call "poison" - over a gigantic swath of the central Pacific Ocean. Mayor Anjain, who "saw the sun rise twice" that morning, could not know the nuclear nightmare awaiting him and his people.

The "super" Bravo at 15-megatons was more than 1,200 times the size of the Hiroshima atomic bomb, and was the U.S.' answer at the height of the Cold War to the Soviet's 1953 Sakharov [perceived] thermonuclear weapon believed to be deliverable to America's shores by Soviet aircraft.

The radioactive plume from Bravo spread across an immense area in the central Pacific Ocean, covering numerous inhabited Marshalls atolls. The downwind people of Rongelap and Utrik [300 miles from Bikini] were evacuated as they suffered from the acute effects of radiation exposure: Australian author Nevil Shute drew the inspiration for his nuclear apocalypse *On the Beach* from the Rongelapese. Likewise, Japanese filmmaker Ishiro Honda based his mutant reptile *Godzilla* on the Bravo incident.

As the international fallout controversy reached a crescendo after Bravo, a hastily called press conference was held in Washington in late March 1954 with Pres. Eisenhower and AEC chair Lewis ["nuclear energy too cheap to meter"] Strauss, his Administration's top

lieutenant in nuclear matters. Having just returned from the islands, Strauss soothingly explained that "the 236 Marshallese natives appeared to me to be well and happy." Strauss added the caveat that "the medical staff on Kwajalein have advised us that they anticipate no illness, barring of course, diseases which may be hereafter contracted."

When I interviewed Nine Letobo from Utrik in 1981, she recalled that after Bravo "many women had 'jibun' ('miscarriages'), including myself who gave birth to something that was not like a human being ('ejab armij'). Some women gave birth to things resembling grapes and other fruits, and some women even stopped having children, including me. Things are not the same now, and people are not as active and healthy as before 'the bomb.'"

Today thirty-six radiogenic disorders are believed to stem from the nuclear testing between 1946-58, when sixty-seven A- and H-bombs were detonated at Bikini and Enewetak. A recently released Pentagon report known as "Project 4.1" has added fuel to the controversy surrounding Bravo. Project 4.1 called for the "study of responses of human beings exposed to significant beta and gamma radiation due to fallout from high yield weapons," and was circulated on November 10, 1953, nearly four months before the Bravo event.

The late Dr. Robert Conard, head of the Brookhaven/AEC medical surveillance team for the islanders, wrote in his 1957 annual report on the exposed Marshallese: "The habitation of these people on Rongelap Island affords the opportunity for a most valuable ecological radiation study on human beings . . . The various radionuclides present on the island can be traced from the soil through the food chain and into the human being."

In reference to the exposed Marshallese after Bravo, AEC official Merrill Eisenbud bluntly stated during a NYC AEC meeting in 1956, "Now, data of this type has never been available. While it is true that these people do not live the way westerners do, civilized people, it is nonetheless also true that they are more like us than the mice."

Thirty years later in 1985, the Rongelap islanders abandoned their homeland [first inhabited 2,000 years ago] due to fears of lingering radiation. To date around 2,000 Marshallese have been awarded compensation for health injury from the tests. The Congressionally-formed Nuclear Claims Tribunal has paid out US\$100 million since 1988, and considers thirty-six radiogenic disorders for claimants. The NCT has a serious backlog, is out of money, and awaits action from the U.S. Administration and Congress.

If the dislocated Rongelap people will return to their atoll home: the Rongelap return can perhaps signal a new beginning for the Marshall Islanders, the nuclear nomads and a reminder of last century's Cold War. And maybe the new Administration and Congress can see fit to fulfill their historic responsibility toward the people of the Republic of the Marshall Islands.

WISE published (News Communique 454, 21 June 1996) a very extensive chronology of the tragedy of the Marshall Islands 1946-1996, compiled from the dossiers at the library of the Laka Foundation. It is still available at: <http://www10.antenna.nl/wise/454/4498.html>

**Source:** Yokwe Online, contributed by Glenn Alcalay, March 7, 2010

# FESSENHEIM: RADIOACTIVE STEAM GENERATORS

**The French Nuclear Safety Authority (ASN) requests the replacement of the three steam generators at the French Fessenheim-2 reactor. The local anti-nuclear groups, supported by the national umbrella Sortir du Nucleaire, are calling for the definitive shut-down of the reactor.**

**(705.6023) WISE Amsterdam** - In May 2009, during a "normal shut-down for refuelling and maintenance operations" of the second reactor at Fessenheim on the French-German border, traces of corrosion were detected on some internal tubes in one steam generator. The same observations were made earlier at the also French Bugey nuclear power plant. Both reactors are of about the same age, from 1977 and 1979 respectively.

The studies undertaken to find out the causes of the corrosion and the search for possible remedies took the rest of the year 2009. In January 2010, the ASN asked Électricité de France (EDF), the owner of the plant, to start a complete survey on the steam generator design and performance. "This will allow an early replacement, before too much damages occur to the steam generators". In other words, EDF has to replace the steam generators which have "serious anomalies". In 2001, the three steam generators of the first Fessenheim reactor have already been replaced. The operation costs were more than 100 million Euros (US\$135 million). Those three old steam generators, with a combined weight of more than 300 tons and highly radioactive, are still stored on the Fessenheim site. Since 1995, EDF adopted a 'standard building project' suitable for storage of contaminated steam generators on all French nuclear sites: a concrete roof and walls from 50 to 80 cm thick. This building can accommodate the three decommissioned steam generators of a unit.

Since the steam generators are part of the primary cooling system, with thousands of small tubes inside through which the primary coolant flows, these pipes have the same kind of contami-

nation that all the other pipes in the primary cooling system have – fission products (which emit beta and gamma radiation) like cobalt-60 and cesium-137, transuranic elements (mostly alpha-emitters) such as plutonium, americium and curium, and corrosion products. Activation products such as

can be produced. The contribution of the second Fessenheim reactor to the total French nuclear electricity production is less than 1%. That is, if the reactor functions well. In the last 3 years it has been plagued by several incidents and has not been productive for more than 60% of the time.

## **Contaminated SGRs from Canada to Sweden.**

Canadian Bruce Power's plans to ship 16 old radioactive contaminated steam generators (SGR) through the Great Lakes and over to Sweden where they will be taken apart by Studsvik. The intention is to take the steam generators apart in order to separate the more radioactive components from the less radioactive parts, with the idea that the less radioactive metals can be recycled whereas the more radioactive parts would be repackaged and shipped back to Bruce.

The 100-ton steam generators will be trucked and shipped to Montreal where they will be loaded onto an ocean-going vessel bound for Sweden. It is supposed to happen this year, possibly starting soon.

There is an interesting video available on youtube. It includes some discussion of radiation levels, but the concern is limited to (1) penetrating gamma radiation and (2) surface contamination. The video is called "Radiation Protection" and available at: <http://www.youtube.com/watch?v=8QnliUVNdOc&feature=related>

tritium and carbon-14 (both beta-emitters with no gamma) are also present. The significance of the transuranic elements is their very long half-lives, measured in centuries or millennia, combined with their very high toxicity. Being alpha emitters, they are harmless inside the steam generator, but once outside in the environment they are very dangerous and remain so for a very long time.

Building new steam generators takes time and installing them takes about half a year, during which no electricity

In March 2010, EDF and ASN together decided to postpone the decennial check-up, initially foreseen for this year, to 2012, in order to prepare the replacement of the steam generators. This decision is in fact illegal, the previous authorization for 10 years has been issued in 2001. Even with new steam generators the plant will not be able to run for much more than ten years on. The replacement operation will cost at least 150 millions Euros, and take 6 months, at least. It is highly questionable whether the be-needed investment will be recuperated within the remaining 10 years of operation.

**Sources:** Press release "Stop transports - halte au nucleaire" / 'Replacement of Two-Blocks Steam Generators', Remi Thevenet, AREVA, 2009, available at: [http://www.iaea.org/Nuclear-Power/Downloads/PLIM/2009-May-TM-USA/6\\_SGR%20in%20two%20blocks.pdf](http://www.iaea.org/Nuclear-Power/Downloads/PLIM/2009-May-TM-USA/6_SGR%20in%20two%20blocks.pdf) / Email Gordon

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# REVELATIONS EDF INSIDER: EPR PRONE TO MAJOR ACCIDENT RISK

The French Network for Nuclear Phase-out (Réseau "Sortir du nucléaire") reveals confidential documents disclosed by an anonymous insider from EDF (Electricité de France, the main French power utility). These documents show that the "design of the EPR presents a serious risk of a major nuclear accident" - a risk deliberately taken by EDF to increase its profitability. Because it is potentially vulnerable to a situation which could have uncontrollable consequences, the EPR reactor is extremely dangerous.

(705.6024) **Sortir du nucléaire** - "Sortir du nucléaire" has set up a group of experts to analyse these recently received documents thoroughly. Here are the first lessons we can learn from them, which are of the utmost importance.

Some operating modes could cause the EPR reactor to explode because of a control rod cluster ejection accident (these control rod clusters moderate the nuclear reaction). These operating modes are mainly related to an objective of economic efficiency, requiring the power of the reactor to adapt to electricity demand. Thus, in order to find a hypothetical economic justification for the EPR, its designers chose to take the very real risk of a major nuclear accident.

EDF and Areva (the leader of the French nuclear industry) have tried to find a solution to the problems related to the operating mode of the reactor: these efforts have failed. The French Nuclear Safety Authority (ASN) has apparently been kept in the dark about these issues.

So the EPR reactor design seems to increase the risk of a major accident, which would lead to the destruction of the confinement and mass dispersion of radionuclides in the atmosphere.

The accident scenario in detail: According to calculations by EDF and Areva, the reactor's RIP (Instant Return to Power) control mode and the control rod cluster configuration can induce a rod ejection accident during low-power operation, and lead to the rupture of the control rod drive casing (i). This rupture would cause the coolant to leak outside the nuclear reactor vessel. Such a loss of coolant accident (LOCA - a very serious type of nuclear accident) would damage a large number of fuel rods by heating fuel pellets and claddings (ii), and thus cause the release of highly radioactive steam into the containment. So there is a great risk of a criticality accident resulting in an explosion (iii), the reactor power being increased in an extremely brutal way. Following the ejection of control rod clusters during low-power operation, the reactor emergency shutdown may fail (iv). Whatever the configuration of the

control rod clusters, a rod ejection accident induces a high rate of broken fuel rods and therefore a high risk of a criticality accident (v).

For more details, see the documents disclosed by an anonymous EDF source (especially document No. 1) on the website of "Sortir": [www.sortirdunucleaire.org](http://www.sortirdunucleaire.org)

#### Notes:

- i See paragraph 6.1.6 Document No. 4
- ii Cf. Table 3, Document No. 4
- iii See Document n°4, Document n°5 Part 2, Rapport Préliminaire de Sécurité EPR 15.2.4.e
- iv See Document n°2, note 9
- v See Document n°2, note 8.2.1

**Source:** Press release, 6 March 2010, Réseau "Sortir du nucléaire"

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# PROLIFERATION COSTS OF LASER ENRICHMENT

**Safety and non-proliferation are two key premises – "important minimum requirements" – for global expansion of nuclear power and countries seeking nuclear use must adhere to these principles, Executive Director of the International Energy Agency (IEA) Nobuo Tanaka stressed during the International Conference on Access to Civil Nuclear Energy held in Paris. The meeting, initiated by France and co-organized by the International Atomic Energy Agency and OECD, aims to promote bilateral and multilateral cooperation between countries eager for nuclear access and willing to share nuclear experience.**

**(705.6025) WISE Amsterdam** - But what about proliferation? Due to a new technology, the problem of proliferation will rather become worse than better. Two scientists are claiming that the 'new' uranium enrichment technology SILEX (separation of isotopes by laser excitation) is so proliferation prone that the dangers outweigh the so-called advantages: exponential improvements in efficiency.

In an article in *Nature* (March 4, 2010) the two -Francis Slakey (Upjohn lecturer in physics and public policy at Georgetown University, Washington DC) and Linda R. Cohen (professor of economics and law at the University of California, Irvine)- they warn that the world is heading towards the development of nuclear-enrichment technologies so cheap and small that they would be virtually undetectable by satellites. They say that those proliferation risks incurred from such technologies are "simply not worth the benefits". Over the past 60 years, technologies that enrich uranium to make fuel for nuclear reactors have shown exponential improvements in efficiency. But those improvements also come with a heavy price: an increased risk of proliferation. It is far easier to covertly build a small, lower-energy enrichment facility than a large, energy-intensive one.

In their opinion, the newest laser enrichment technology – called separation of isotopes by laser excitation (SILEX) – offers more potential risks than benefits. The development and potential misappropriation of an enrichment facility too small and efficient to be detected could be a game-changer for nuclear proliferation.

Global Laser Enrichment, a subsidiary of GE Hitachi Nuclear Energy, has applied for a license from the US Nuclear Regulatory Commission (NRC) to operate a full-scale commercial SILEX plant in North Carolina. This is open for public petition until 15 March, and a final decision is expected to take at least another year. Numerous analysts, as well as the authors of a recent report from the American Physical Society ('Technical Steps to Support Nuclear Arsenal Downsizing'), have called for the NRC to examine proliferation risks as part of its licensing process. Such a barrier would discourage commercial research and development in this area, the authors suggest.

To assess the costs and benefits of a new technology, its efficiency must be measured. To make reactor fuel, the concentration of fissile uranium-235 must be increased compared with the uranium-238 in the sample. The efficiency of an isotope-separation technology can be measured in terms of the increase in the proportionate concentration of uranium-235 in the enriched stream – or 'separative work units' (SWU) – per megawatt-hour of electricity consumed by the plant (SWU MWh<sup>-1</sup>). The quantity of SWUs needed to produce a kilogram of reactor fuel depends on three factors: the percentage of uranium-235 required in the final fuel, the percentage present in the natural uranium feedstock and the percentage acceptable in the depleted uranium tailings (waste). If uranium feed is cheap and SWUs expensive, fuel of a given enrichment level can be made in a cost effective way by using more uranium and living with a higher proportion of residual uranium-235 in the tailings. Alternatively, expensive uranium and cheap SWUs

make it worthwhile to squeeze more of the uranium-235 out of the feedstock.

The initial enrichment method, developed in the 1940s and called the calutron, was a mass spectrometer that ionized the uranium and used magnetic fields to filter out the uranium-235. This was displaced by the technique of gaseous diffusion, which forces uranium hexafluoride through semipermeable membranes.

In the 1960s, centrifuge enrichment was developed, which dramatically decreased the energy required. The technology's efficiency has increased from roughly 0.5 SWU MWh<sup>-1</sup> in 1945 to more than 5 SWU MWh<sup>-1</sup> in the 1960s, and over 20 SWU MWh<sup>-1</sup> today.

More than 20 countries have experimented with laser enrichment over the past two decades, including South Korea and Iran, without much success. SILEX was developed by the Australian company Silex Systems, and is now being commercialized exclusively by GE Hitachi. In 2006, Silex stated that it anticipated the technology to be anywhere from 1.6 to 16 times more efficient than first-generation centrifuges. The details are classified and the efficiency claims impossible to verify. But assuming a continuation of historical trends in enrichment efficiency it seems reasonable to assume a doubling of today's best efficiency by 2020.

It is generally assumed that this improvement will lead to financial benefits for consumers. But such an effect would be small: about US\$0.66 per household per month, as calculated in the *Nature* article. Doubling nuclear generation in the US by 2025 (a very ambitious growth scenario for the nuclear industry) could double the value

of enrichment savings to US\$1.32 per household a month. In addition, a change in the relative prices of enrichment services (lower) and natural uranium (higher) will increase the demand for SWUs in the production of fuel. If the price of the former halves and the price of the latter doubles, the authors of the Nature article calculate — based on a cost-optimization of formulae for enrichment processes from the Massachusetts Institute of Technology in Cambridge — that demand for SWUs will increase by 40% for the same level of electricity production from nuclear power.

The construction, heat signature and power usage of large nuclear enrichment plants can usually be detected, but smaller centrifuge plants can be kept secret for years, as the recent revelation of a facility being built in Qom, Iran, shows. If laser enrichment is as efficient as has been suggested, then it could occupy a space substantially smaller than a warehouse (75% smaller than centrifuge technologies) and draw no more electricity than a dozen typical houses. This could put such plants well below the detection threshold of existing surveillance technology — even when used to enrich uranium on a large scale.

#### **Hidden costs of nuclear power**

As a contrast to the savings anticipated from laser enrichment, calculated in the article, consider the public costs associated with containing such technologies.

According to the Congressional Research Service, the US government spent roughly US\$990 million in 2008 on nonproliferation programs. In particular, this included more than US\$200 million to research and develop technology to detect covert enrichment facilities. Others estimate that US\$5 billion — 10% of the US government's annual budget for nuclear-security activities — can be credited to non-proliferation activities.

Over the past decade, the United States has spent money on non-proliferation activities at a total cost of more than US\$50 per household a month.

Laser enrichment plants can be used to produce highly enriched uranium in just a few stages, as opposed to the thousands of stages required using centrifuges. A 1977 report by the US Office of Technology Assessment (OTA) highlighted this as one of the major proliferation problems posed by laser enrichment. The report also expressed the concern that the sale of laser enrichment technology by commercial entities, could hasten the proliferation of the technology. The sensitive nature of the SILEX technology was formally recognised in 1996, after SILEX Systems signed an agreement with the United States Enrichment Corporation (USEC). The US Department of Energy (DOE) then classified the SILEX process as “Restricted Data”, RD — a classification that usually relates to the design of nuclear weapons, or the use or acquisition of nuclear material suitable for their construction. This was the first time in history that privately held technology was given this classification. On April 30, 2003, USEC Inc. announced that it is ending its funding for research and development of the SILEX laser-based uranium enrichment process. USEC has been funding R&D on the SILEX process since 1996, when the Company signed an agreement with Silex Systems Limited in Australia. USEC will now focus all of its advanced technology resources on the demonstration and deployment of USEC's American Centrifuge uranium enrichment technology. On May 22, 2006 GE Energy's nuclear business has signed an exclusive agreement with Silex Systems Limited, an Australia-based technology innovator, to license the technology and develop the company's next generation low enriched uranium manufacturing process in the United States. The transaction is subject to, among other things, governmental approvals and regulatory controls on the design, construction and operation of the process. On October 4, 2006, Silex announced that GE Energy's nuclear business and Silex Systems Limited received the U.S. government authorizations required to proceed with an agreement granting GE exclusive rights to develop and commercialize Silex's laser-based uranium enrichment technology.

An increase in the number of countries with access to perhaps-undetectable laser enrichment technologies would only increase these costs. As a first step in containing the risks of laser enrichment, Congress should require that an evaluation of proliferation risks be part of the NRC licensing process.

Such an evaluation would be a natural extension of the NRC's mandate to ensure that technology is not used “in a manner that is hostile to the interests of the United States”. The NRC already has a process for evaluating confidential information, so this need not be difficult to enact.

An argument has been made that by developing laser enrichment technology in the United States, US entities can ensure that the technology is adequately safeguarded against proliferation. History does not instill confidence in this approach. Previous enrichment technologies — the calutron, gas centrifuge and advanced centrifuge — have all created proliferation risks over the past 50 years despite efforts to withhold the information.

A second argument offered in favour of developing such technologies is that if the United States doesn't do so, some other country will, in which case the costs of protecting against proliferation will be even higher. There are two responses to this: first, if the United States ceases development and takes no further action, the technology will certainly be delayed. Second, to limit the availability of the technology, the United States need now only negotiate with the handful of technologically advanced countries capable of laser enrichment innovation. It would be best if all nations took a stance of repressing new technologies for more efficient uranium enrichment. But it is clear that the risk of proliferation will only decrease when nuclear power is phased-out.

**Sources:** ‘Secrets, lies and uranium enrichment: The classified Silex project at Lucas Heights’, Greenpeace, 2004 / ‘Stop laser uranium enrichment’, Francis Slakey and Linda R.Cohen in: Nature, 4 March 2010 / <http://www.wise-uranium.org/eproj.html#SILEX/> Xinhua News Agency, 8 March 2010

# RESISTANCE FOR A NUCLEAR-FREE FUTURE

## Celebrating 3 decades of the Nuclear Resister and Nukewatch

The Nuclear Resister, Nukewatch and the Oak Ridge Environmental Peace Alliance (OREPA) invite you to join them for a national gathering, culminating with nonviolent anti-nuclear direct action, July 3-5, 2010, to declare our independence from nuclear weapons and nuclear power. The gathering will be held in Maryville, Tennessee, USA, with protest and action at the Y-12 nuclear weapons complex in nearby Oak Ridge, where OREPA has sustained a nonviolent campaign for over 20 years.

**(705.6026) Nuclear Resister** - At a critical time in the movement for a nuclear-free future, and to mark the 30th anniversaries of Nukewatch and the Nuclear Resister, we are coming together to increase awareness and action around nuclear issues, and advance the role of nonviolent direct action and civil resistance in this movement. We will also be marking the 30th anniversary of the Plowshares movement and the inaugural Plowshares' Eight direct disarmament action of September 9, 1980.

The Nuclear Resister began in 1980 to chronicle anti-nuclear and anti-war civil resistance, with a focus on supporting the men and women imprisoned for these actions. The newsletter publishes writings from prisoners, reports on actions, trials and sentencings, provides addresses of imprisoned activists and publicizes future actions.

Nukewatch has a foundation of investigating and divulging the truth about nuclear weapons and power since 1979. The organization has a strong history of drawing people together - from the mis-

sile silo fields, to H-bomb trucks on the highways, to a decade-long campaign shutting down the Navy's Project ELF (one way communication trigger to their nuclear armed Trident and submarines)

The Oak Ridge Environmental Peace Alliance works to stop nuclear weapons production at the Y-12 National Security Complex in Oak Ridge, Tennessee, and to build nonviolent community to sustain a lasting movement for peace and justice.

### July 4 weekend

Come and meet with hundreds of activists from around the U.S., as we educate and energize ourselves throughout a weekend of networking, music, speakers, celebration, workshops, community, nonviolence training and nonviolent action. Because long-lived radioactive waste makes this a multi-generational campaign, we envision a gathering where new and seasoned activists can meet and strategize for the future - a nuclear-free future!

We will gather two months after the 2010 Nonproliferation Treaty review conference and before the mid-term elections - a time when public attention needs to be focused on nuclear disarmament and a nuclear- and carbon-free energy future. It will also take place on the eve of the 14th anniversary of the July 8, 1996 World Court advisory opinion on nuclear weapons.

### Join:

This gathering is for people who advocate, practice and/or support nonviolent direct action, civil resistance and civil disobedience in the struggle to stop nuclear power and abolish nuclear weapons.

We hope to see you July 4th weekend, 2010, at Maryville College, Maryville, Tennessee, and the Y-12 Nuclear Weapons Complex, Oak Ridge, Tennessee

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## US DOE MOTION TO WITHDRAW YUCCA LICENSE "WITH PREJUDICE"

March 3, 2010 will hopefully mark the real beginning of the end for the failed nuclear waste dump proposed for Yucca Mountain on Western Shoshone Land in Nevada, more than 30 years ago. The US Department of Energy (DOE) filed a motion with the US Nuclear Regulatory Commission (NRC) that would withdraw its application for a license to build and operate a nuclear waste repository with the added stipulation that the NRC rule not only to let DOE withdraw, but to do so with prejudice, meaning that there could be no future application for the site.

**(705.6027) NIRS** - This action not only spells a clear intention by the Obama Administration to deliver its promise to kill the site, it actually grants a 1998 petition made by Nuclear Information and Resource Service and signed by more than 200 organizations calling on the Secretary of Energy to disqualify

the site since it was known at that point it could not meet a key site suitability criteria on ground water travel time. The DOE motion effectively grants the NIRS petition, 12 years later.

In response to the DOE motion to withdraw its application for a license with

prejudice, a number of entities have filed motions to join the licensing proceeding in order to object to the DOE action including: the States of South Carolina and Washington, the County of Aiken in SC, and a business association based in the Hanford, WA area. It is rumored that other entities including

the National Association of Regulatory Utility Commissioners (NARUC) are considering similar action. Their arguments against the NRC granting DOE's motion are based on a very thin reading of the Nuclear Waste Policy Act which requires that the Secretary of Energy make a license application for Yucca Mountain, but failed to anticipate a situation where that license might be withdrawn. In addition, a growing number of lawsuits have been filed which argue a very tenuous thread which assumes that since a dump application was submitted a dump license will be granted. Taking that assumption as the basis of

both "standing" and also the "harm" that DOE's action would cause, various South Carolina entities are arguing that not building Yucca will harm the people of South Carolina, even to the point of diminishing property values because of radioactive waste generated in SC staying there; no mention is made of the massive, long-term storage of radioactive wastes at Savannah River Site (SRS). Ironically, many of these same entities are boosters for the idea of a reprocessing center at SRS.

Since the NRC has the power to determine this outcome, this will be a turning

point for that agency: is it simply a "rubber stamp?" or is it capable of policy determinations. Unfortunately, until there is a change in the Nuclear Waste Policy Act, no one can officially declare this dump dead, however a ruling in favor of DOE's motion to withdraw the license with prejudice would go a long way in that direction.

**Source and contact:** Mary Olson is Southeast Regional Coordinator for Nuclear Information and Resource Service (NIRS)  
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## IN BRIEF

**RWE looses again: Borssele has to remain in public hands.** RWE failed to gain 50% of the Netherlands' only nuclear power plant at Borssele through its takeover of Dutch utility Essent. The ruling by the Arnhem appeal court upholds an earlier ruling prohibiting Germany's RWE from acquiring Essent's 50% stake in the Borssele nuclear plant as part of its takeover of the Dutch utility. According to Delta, the appeal court decision has emphasized that the country's sole nuclear power plant must remain in public ownership. Any transfer of Essent's share of the plant to RWE would therefore contravene this. In September 2009, the transaction price for RWE's takeover of Essent was dropped by 950 million Euro (then worth US\$1.35 billion) to take into account the exclusion of Borssele from the deal while Delta's court case against the proposed transfer was ongoing. Essent's share in the plant has remained in the hands of the provincial and municipal governments who were the company's original public shareholders.

The Dutch coalition government collapsed on February 20, when the two largest parties failed to agree on whether to withdraw troops from Afghanistan this year as planned. Elections are planned on June 9, with an expected right-wing victory. The extreme-right party PVV ('party for freedom') is expected to become one of the largest –or even the largest– party in parliament. The PVV is (besides anti-islam and with racist tendencies) extremely pro-nuclear, anti-wind & solar energy and does not believe in climate change and speaks consistently about the environmental movement as the 'environmental mafia'.

The just fallen coalition government had agreed not to approve any new nuclear plants in the Netherlands during its mandate. Dutch utility Delta has announced plans to build a second nuclear plant at the site, embarking on the first stage of the pre-application process in June 2009.

German utility RWE has indicated it is also interested in building a nuclear power plant in the Netherlands, RWE CEO Juergen Grossmann said at the company's annual earnings press conference on February 25 in Essen, Germany

**World Nuclear News, 3 March 2010 / Platts, 25 february 2010**

**USDOE: US\$40 million for Next Generation Nuclear Plant.** On March 8, U.S. Secretary of Energy Steven Chu announced selections for the award of approximately US\$40 million in total to two teams led by Westinghouse Electric Co. and General Atomics for conceptual design and planning work for the Next Generation Nuclear Plant (NGNP). The results of this work will help the Administration determine whether to proceed with detailed efforts toward construction and demonstration of the NGNP. If successful, the NGNP Demonstration Project will demonstrate high-temperature gas-cooled reactor technology that will be capable of producing electricity as well as process heat for industrial applications and will be configured for low technical and safety risk with highly reliable operations. Final cost-shared awards are subject to the negotiation of acceptable terms and conditions.

The NGNP project is being conducted in two phases. Phase 1 comprises research and development, conceptual design and development of licensing requirements. The selections announced now will support the development of conceptual designs, cost and schedule estimates for demonstration project completion and a business plan for integrating Phase 2 activities. Phase 2 would entail detailed design, license review and construction of a demonstration plant.

**U.S. Department Of Energy, Press Release 8 March 2010**

**Switzerland: Geneva will fight extension Muhleberg licence.** Geneva City Council has decided to appeal to the Federal Administrative Tribunal against the decision of the federal authorities to allow the 355 MW Muhleberg nuclear plant to continue operating beyond 2012, when it will have been 40 years in service. Geneva will contribute CHF 25,000 (US\$23,000 or 17,000 Euro) to help meet the costs of a committee formed to oppose the licence extension. In November 2009 the

electorate of the neighbouring canton of Vaud also voted against the extension. The centre-left Social Democrats and the Green Party are also opposing the licence extension.

**Power In Europe, 22 February 2010 / Nuclear Monitor 702, 15 January 2010**

**Uranium mining - victory in Slovakia!** After more than three years of campaigning Slovak parliament finally agreed on legal changes in geological and mining laws in order to stop uranium mining in Slovakia. All the changes were proposed by anti-uranium mining coalition of NGOs led by Greenpeace and supported by over 113 000 people that signed the petition. For Slovak environmental movement this is a really important milestone. For the first time in Slovak history NGO's were able to: 1) collect over 100 000 signatures (a number given by law for the Parliament to discuss an issue) - note that Slovakia has 5 million citizens; 2) to open an environmental topic in Slovak parliament by a petition; 3) and finally to achieve a legal change by petition initiative.

Legal changes agreed by parliament on March 3 are giving more information access and competencies for local communities, municipal and regional authorities to stop or limit geological research of uranium deposits and to stop proposed uranium mining. It's not a complete ban of uranium mining, but a significant empower of local and regional authorities in the mining permitting process. All 41 municipal authorities influenced by proposed uranium mining already declared that they do not agree with proposed uranium mining in their territories.

The chance that Slovak uranium will stay deep in the ground is much higher today!

**Greenpeace Slovensko, Bratislava, 4 March 2010**

**Uranium from stable and democratic countries?** One of Kazakhstan's most prominent business figures and a former uranium tycoon, Mukhtar Dzhakishev was arrested last year on accusations of corruption, theft and illegal sales of uranium assets to foreign companies. Dzhakishev's case, along with a string of other high-profile arrests in the former Soviet state and world No. 1 uranium producer, has fuelled speculation of an intensifying power struggle within the political elite. Kazakhstan, hit hard by global economic slowdown, wants to attract fresh foreign investment as well as bolster the role of the state in strategic industries such as uranium and oil. It has also alarmed human rights groups who have questioned Kazakhstan's methods of fighting corruption in a country where President Nursultan Nazarbayev, in power for two decades, tolerates little political dissent.

Dzhakishev, who was head of state uranium major Kazatomprom from 1998 until his arrest and played a key role in turning Kazatomprom into a major global uranium player, has denied all accusations. "It is obvious that I cannot count on justice in my own country and my fate has already been decided," he wrote from his detention centre in a letter published by his lawyers this week. His arrest left Kazatomprom's foreign partners such as Canada's Uranium One worried about the future of their projects. Other investors include France's Areva and Japanese companies such as Toshiba Corporation. Closed-door court hearings into earlier allegations of theft and corruption have already started and lawyers expect a verdict in March.

**Reuters, 4 March 2010**

**Israel to build reactor –but will not allow inspections?**

Israel will shortly unveil plans to produce nuclear-generated electricity, officials said on March 8. Infrastructure Minister Uzi Landau said Israel, which has a population of 7.5 million and generates electricity mostly using imported coal and local and imported natural gas, is capable of building a nuclear reactor, but it would prefer to work with other countries. Israel already has two reactors -- the secretive Dimona facility in the Negev desert, where it is widely assumed to have produced nuclear weapons, and a research reactor, open to international inspection, at Nahal Soreq near Tel Aviv.

Unlike other countries in the region, Israel has not signed the 1970 Non-Proliferation Treaty (NPT), which is suppose to curb the spread of nuclear technologies with bomb-making potential. Yet Israel does have a delegation at the International Atomic Energy Agency (IAEA). Landau said it would not be a problem for Israel to build a civilian reactor without signing the NPT:

"There are many countries who are not signatories to the NPT and they are doing fine. There are others which are signatories and the world community did not really take proper care against proliferation," he said. Many countries? India, Pakistan and North-Korea (withdrawn), three (excuse me, four with Israel) and 189 signatories, you call that many? Asked whether IAEA inspectors would supervise the building of an Israeli plant, Landau said: "We take care very well of our own needs and don't need inspectors."

**Reuters, 8 March 2010**

.... And Syria? Meanwhile, Israel's arch-foe Syria responded in Paris saying that Damascus needs "to consider alternative sources of energy, including nuclear energy." Syria's candidacy for the nuclear club will raise some eyebrows too, given the regime's close ties with Iran and the still unanswered questions over an earlier alleged attempt to build a reactor in secret. The International Atomic Energy Agency complained last year that Damascus had refused to cooperate with its investigation of a remote desert site called Dair Alzour, which was bombed by Israel in September 2007. Inspectors have found unexplained traces of uranium at the site, as well as at a nuclear research reactor in Damascus, amid reports that Syria has been working with Tehran and North Korea on covert nuclear programs.

**AFP, 9 March 2010**

## 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.

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