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SWITZERLAND: AGEING NUCLEAR PLANTS AND A REFERENDUM FOR 2011

Swiss nuclear power plants are approaching the end of their life-cycle, with its oldest reactor, Mühleberg, now counting 36 years in activity. Electricity utilities are now officially planning the construction of at least one new nuclear power plant, at Goesgen, to maintain the share of nuclear power at 40% of national electricity consumption

(676.5887) Sortir du nucléaire Geneva -

With two thirds of its territory constituted by the Alpine chain, Switzerland is gifted with a manna from heaven in the guise of hydroelectric power. Tapping into nature's forces to produce energy through gigantic dams provided Switzerland with a seemingly endless supply of domestic energy. Unsurprisingly, hydro-power was not used sparingly and marketing campaigns to promote electric stoves and radiators pushed electricity «demand» always higher. Nuclear power was presented, as in other countries, as the long «awaited» endless and cheapest source of energy one could dream of. Today with 40% of its electricity coming from its 5 nuclear power installations, Switzerland ranks at the 5th place in the world for its dependence on nuclear energy.

Ageing nuclear power plants.

Nuclear power plants obviously do not get safer as they grow old. But this does not stop their owners from officially requesting from federal surveillance authorities to be granted with an unlimited duration of time to run these plants. Also, to replace power-plants that sooner or later will have to be decommissioned, and to answer «growing electricity demand», a major Swiss energy holding has officially requested an authorisation to build a new nuclear power plant close to the ageing Goesgen plant. (see Nuclear Monitor 674, 26 June 2008, In Brief) At the same time members of parliament known to be sympathetic to nuclear industry interests passed a new law imposing stringent conditions on any new gas powered plant, making these potential competitors economically unsound. With four proposed new plants to be built, the natural gas

alternative is also in the starting blocks to answer the well publicised «inevitable power supply failure to come». The nuclear lobby move in parliament has perhaps been made redundant by a harsh opposition from a part of Swiss environmentalist organisations towards any new fossil-fuelled power plant.

The gas and nuclear dilemma

For decades, natural gas held an important place in ecologist scenarios leading to a post-nuclear age. Natural gas was to be a transitional source of energy, growing in proportion with the phasing-out of nuclear power. Then gas should have decreased while a mix of energy efficiency, change of habits and renewables slowly became mainstream. But then came a growing awareness of climate change. And Switzerland is one region in the world where global warming is the most visible, with every glacier retreating at a frightening speed. Think of a national heritage literally melting under your eyes and you have a picture of how global warming is felt in Switzerland. True, for the same amount of energy output, gas combustion emits a third of the amount of CO₂ emitted by coal. But environmentalists see new CO₂ emissions from planned gas-fired power plants as nullifying efforts made in other sectors – i.e transports - to reduce national greenhouse gas emissions. In order to bridge the damaging division between anti-nuclear campaigns and campaigns fighting greenhouse gas emissions, the Swiss co-ordination of major environmental NGOs have been meeting for 6 months to work on a common energy scenario for Switzerland leading to 2050. The consensus building is expected to reach an agreed upon scenario this fall.

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How to replace nuclear power ?

A spokesman for the Federal Department for Energy recently told me Switzerland could run normally with 30 to 40% less electricity, switching to currently available technology. But I would add: probably not with currently available public opinion and even less with currently available understanding of public opinion from Members of Parliament. Also, it is disheartening but necessary to acknowledge that in times of peace there are no examples of countries or provinces where energy demand has been voluntarily reduced. The best we have are examples, where demand has been close to being stabilised. There are countless regulatory programs and technologies capable of seriously reducing energy demand, but the official aim for Swiss federal authorities is to contain the rise in electricity demand.

As for renewable energies (RE), mainly regarding solar, federal authorities have significantly reduced subsidies for research and development, after having been among the leading countries world-wide in the field. Encouraging RE producers through feed-in tariffs is still significantly underfunded in Switzerland. The Swiss electricity market is currently being liberalised and a limited budget has been voted by Parliament to buy RE (from large installations) at a sustainable price from producers, starting this year. However the annual budget voted for 2008 is insufficient and has already been exhausted. Today even France's Sarkozy has a better feed-in tariff to boost RE.

As for the development of hydro power, it is still a controversial issue amongst environmental organisations, with WWF Switzerland being critical towards hydro development. The era and the potential for building large dams in Switzerland is generally

regarded as being over, whereas there is a lively controversy on the potential for the development and the conditions for the development of small scale hydro power-plants on small rivers. Even more so, wind energy is a highly controversial issue amongst environmental organisations, notably environmentalist NGOs being in favour (Greenpeace) and conservationist NGOs opposed to developing wind turbines (Pro-Natura). Geothermal energy credibility has received a wounding blow in 2007, when a low magnitude earthquake hit Basel, an earthquake widely thought to be linked to an experiment at the neighbouring deep heat mining prototype. This incident, even though it produced no material damage, has actually cost, for an unknown time, the reputation of deep heat mining in this very promising region.

How did the Swiss get there ?

It is widely thought that through its semi-direct democratic system, the Swiss deserve the policies they live by and that this should also apply to nuclear power. In fact, while it is true that Swiss citizens can force a federal vote on any issue it wishes to formulate, and that there have been 3 unsuccessful federal popular votes to phase out nuclear power (1984, 1990, 2004), it is also true that there are no upper financial limits on political marketing campaigns that ultimately have the power to shape the undecided citizens opinions. Swiss citizens have still not had a fair debate on nuclear power prior to a national vote, with for example equal and free public TV and radio time to address energy issues and future scenarios. Also, contrary to EU law, non-EU member Switzerland does not prohibit or limit political advertising in newspapers and on billboards, where advertisements in favor of "nuclear security" flourish. Obviously during

campaigns preceding votes, proponents of a nuclear power phase-out are out-voiced due to financial reasons. This is due to happen once again in 2011 when the Swiss will be asked to accept or reject the planned nuclear power-plant in Goesgen.

Switzerland is destined to be a net energy importer.

Electricity demand is on the rise in Switzerland, year after year. And utilities are encouraging end-users to install heat-pumps and are planning to promote private electric vehicles, switching in both cases energy sources from fossil fuels to electricity. So unless a gut feeling of urgency to reduce electricity consumption arises massively, it is electricity demand that will rise. And it will probably be medium-sized natural gas power-plants with more than 100% domestically compensated CO2 emissions that will be, with no enthusiasm at all, accepted by environmentalists so as to avoid new nuclear plants. But at the same time, the same environmentalists will be thinking about how Switzerland, situated at the heart of Europe, could be using with so much care every unit of energy provided by its melting glaciers, that its nuclear power plants would be made redundant. And the Alpine region could be turned into a net purveyor of clean electricity to neighbouring countries, in the same way as the North Sea region is with wind turbines.

Source and Contact: Philippe de Rougemont, Sortir du Nucléaire, Geneva
Sortir du nucléaire, CP 1378 - CH 1001 Lausanne, Switzerland

For more information on sustainable energy issues and nuclear in Switzerland:
www.sortirdunucleaire.ch (in French)
www.energiestiftung.ch (in German)

U.S.: THE ECONOMICS OF CALVERT CLIFFS

On the shores of the Chesapeake Bay in Maryland, next to two existing atomic power reactors and just down the road from a Liquefied Natural Gas terminal, a company called UniStar Nuclear Energy LLC wants to build what would be the country's largest—and probably most expensive ever—nuclear power plant. Calvert Cliffs 3 would be a 1600 Megawatt behemoth, nearly the size of the two existing reactors combined. Its technology is French: a design by Areva called the Evolutionary Power Reactor (EPR, also known as the European Pressurised Reactor).

(676.5888) NIRS - UniStar itself is half-French; the company is 50% owned by Constellation Energy, based in Baltimore, and 50% owned by Electricite de France (EdF, which also owns several percent of Constellation itself). A growing player in the nuclear power field, UniStar isn't content with just one huge new nuclear project—its ambitions are to build, with various partners, at least four new EPR reactors in the U.S. over the next several years.

Taken together, these projects easily could cost more than US\$40 Billion (with a capital B) or currently 27 billion Euro. Yet UniStar itself has few assets: EdF kicked in an initial \$350 million and promises another US\$275 million, while Constellation put up an initial \$49 million in assets.[1] That's it so far. UniStar doesn't own or operate any power plants of any kind. And, apparently reflecting UniStar's self-proclaimed "innovative business model,"[2] for Calvert Cliffs UniStar has set up a new company, Calvert Cliffs 3 Nuclear Project LLC, with no assets at all, to build and operate this proposed reactor. How does a company with no assets think it can build a multi-billion dollar nuclear reactor? Welcome to the brave new world of nuclear power economics....

Costs of Nuclear Power

Back in the 1950s, nuclear proponents famously promised that atomic power would provide electricity "too cheap to meter." [3] That promise vanished with the reality of soaring reactor construction costs in the 1970s and 1980s. A Department of Energy study of 75 reactors (nearly ¾ of those now existing), found that the average cost overrun from initial cost estimate to reactor startup, was 207%. By the mid-1980s, reactors averaged more than US\$4,000/kw to build (or about US\$4 billion for a typical 1,000 MW reactor), making the term "rate shock" relevant to millions of people.

Although nuclear power has been the most subsidized energy sources—through the Price-Anderson Act, as well as federal support for reactor designs, emergency planning and other costs—the construction costs of the reactors themselves built in the U.S. in the first nuclear era were paid for with private money, not taxpayer handouts as was the case in France, Russia and many other countries. But the enormous cost overruns were more than many utilities, and their Wall Street

backers, could handle. Public Service of New Hampshire went bankrupt; the Washington Public Power Supply System defaulted on billions of dollars of bonds, and several utilities received cost disallowances from their public utility commission that cost them hundreds of millions of dollars.

Reducing both construction costs and uncertainty in cost estimates has been a primary goal of the nuclear industry over the past several years, and indeed has been seen as a prerequisite for new reactor construction. And, as utilities began considering new reactors in mid-decade, the industry's Nuclear Energy Institute (NEI) confidently predicted that new reactors would be reasonable and easily competitive with other generation sources. An article posted on the NEI website in March 2006 (and since removed) predicted that the first new reactors would cost on the order of US\$1500-US\$2,000/kw, or less than half the average cost of reactors built in the 1980s. NEI argued that costs would actually drop from those levels as more experience with new reactor construction was gained.

It appears that NEI was off by 300 percent or more. Current utility cost estimates for new reactors range from about US\$4,000 to US\$6,000/kw, and independent analysts like Moody's Investor Service have predicted even higher costs of US\$7,000 or more per kilowatt.

UniStar has been noticeably reluctant to provide any public cost estimates for construction of the proposed Calvert Cliffs-3 reactor, but in August 2008 hearings before the Maryland Public Service Commission, CEO George Vanderheyden acknowledged that the company's estimates are on the "upper end" of the US\$4,000-US\$6,000/kw level. For a 1600 MW reactor like Calvert Cliffs-3, that would mean construction costs of about US\$9.6 Billion—almost certainly the largest private project ever undertaken in the state of Maryland. If Moody's estimates turn out to be closer to reality—and there are lots of reasons to think that will be the case given the nuclear industry's near complete lack of infrastructure like manufacturing and trained workforce and spiraling costs for basic materials like steel and concrete---then the plant could cost more than US\$11 billion. And if past cost overrun history is a harbinger for the future, all cost estimates can be thrown out the window....

Some indication of the cost trend may be found in Finland, where Areva is building the first of its EPR reactors. Construction began on Olikuoto-3, the world's first EPR, in March 2005. As of August 2008, the reactor is 50% behind schedule and 50% over budget. Areva is building the plant on a fixed-price contract of 3.2 Billion Euros; current estimates are about 4.9 Billion Euros, or about US\$7 Billion, and that estimate includes highly favorable interest rates subsidized by the French government that actually have reduced the cost of the project—such interest rates won't be available in the U.S. With more than three years of work left on the reactor, few are attempting to predict a final cost. Areva's second EPR, being built on the Normandy coast in France, at Flamanville, has encountered similar construction problems to the Finnish project, but cost estimates aren't available there. Construction began there only in the late Fall of 2007.

Financing nuclear reactors in the 21st century

With both Wall Street financiers and utility shareholders making clear that no new reactors will be built using the old methods because of the high costs and high risks involved, the industry and its Congressional backers have sought alternatives, especially in the form of direct taxpayer support for reactor construction costs. As a first step, Congress in 2005 authorized several direct subsidies for new reactors, including federal loan guarantees, production tax credits on electricity produced by the first few reactors, and other federal funding mechanisms. In 2007, Congress expanded on this by offering US\$18.5 billion in taxpayer backed loan guarantees.

How this is intended to work can be seen in the Calvert Cliffs case. UniStar officials have repeatedly made clear that they will only build Calvert Cliffs-3 with the help of taxpayer backed loan guarantees. Since UniStar has few assets, and the Calvert Cliffs 3 Nuclear Project LLC has essentially no assets, traditional loans wouldn't be available to those companies anyway.

In the hearings before the Maryland Public Service Commission, UniStar officials essentially explained how they want it to work. 80% of the money needed to build Calvert Cliffs-3 would come from taxpayer loan guarantees. But the rules of the loan guarantee

program require that loans of that amount would not only be guaranteed by taxpayers—meaning that if the company can't complete the project for any reason, or defaults on the loans, then taxpayers would have to pay the money back—but the loans can come from only one source, the Federal Financing Bank, whose source of funds is the U.S. Treasury. Thus, taxpayers will be lending the money for the project, and then guaranteeing the loans to themselves. Private banks wouldn't be involved at all.

The other 20% of the money, in UniStar's scheme, will come from COFAS—the French equivalent of the U.S. Export-Import Bank, and thus, indirectly, from French taxpayers. Thus, UniStar is not only a company that is half-French, but substantial funds would be expected from the French public. In this case, that could run to US\$2 Billion or more (about the cost the NEI predicted an entire reactor could be built for less than three years ago!).

All of these loans -potentially US\$10 Billion or more- would flow into the Calvert Cliffs 3 Nuclear Project LLC, a company with basically no assets. As a Limited Liability Corporation, if CC3NP defaulted on these loans, the assets of the parent company, UniStar, wouldn't be touched. But UniStar's "innovative business model" provides another layer of protection for its parent companies. UniStar itself, which also has few assets, is a Limited Liability Corporation, meaning that if it fails for any reasons, the assets of UniStar's parents—Constellation Energy and Electricite de France, also would be protected—those companies are two levels away from the potential financial disaster of Calvert Cliffs.

How this could become a gigantic taxpayer rip-off isn't hard to imagine. Even if it all works as UniStar and its Congressional backers envision, it is difficult to discern a cost-benefit advantage to taxpayers. At best, taxpayers would put up many billions of dollars to a private company to allow it to build a nuclear reactor that would service a limited area. If the reactor is completed, someone—i.e. ratepayers, who are also taxpayers, would have to pay for the inflated costs

of the electricity CC3 would provide. After all, UniStar and its allies are not in this to lose money; taking a loss on the electricity sales is not part of their "innovative business model." So even if the loans get paid back, the main result for the public is high electricity prices. The main result for UniStar is potentially huge profits, all paid for by taxpayer loans.

But what if it doesn't all work as planned? For example, given the history of nuclear plant construction costs, it isn't difficult to conjure up a scenario where loans are secured from taxpayers, and CC3 construction begins. But, just as in Finland and France, construction deficiencies are found and the construction schedule becomes delayed while costs increase above the level of secured loans. What could the CC3 Nuclear Project LLC do then? Without assets (except, in this case, a partially complete and failing nuclear power plant project), it can't borrow more money from the private sector. And it already has tapped out its federal loan guarantee funds. Would the project fail, and taxpayers have to pay back billions of dollars in loans for a reactor that is never completed? Or would Congress step in and authorize still more money for a failing project, adding to the overall risk to taxpayers? Neither option would make Congress -or taxpayers- very happy.

Or imagine another scenario, where the reactor is completed more or less on time and on budget and begins operating. The operating revenues are used to pay back the huge loans, leaving minimal amounts for maintenance and upgrades. A couple of years into operation, the reactor experiences a major, though not catastrophic accident, that permanently closes the plant. That has happened before—the Three Mile Island accident took place at a reactor that had operated only three months. Because CC3 Nuclear Project LLC has no assets of its own, it would default on both the remainder of its loans as well as its decommissioning fund, leaving taxpayers to pick up the tab for both. UniStar probably would be safe, though it has few assets that could be used anyway. UniStar's parents, Constellation Energy and Electricite de France, likely would walk away

unscathed, owing nothing.

Or consider a third scenario, in which the reactor is built and operates, but not very well. After all, no EPR ever has been built yet; perhaps it will simply be a nuclear lemon. So the reactor could be completed and put into operation, but never operate at a high enough capacity factor to generate enough revenues to pay back its loans. History shows that is possible too: Colorado's Fort St. Vrain reactor was hailed for its innovative high-temperature gas-cooled design when it began operation in the 1970s. When it closed permanently a few years later, with a lifetime capacity factor of only 14%, it was seen as an example of a praised technology not working in practice.

In the past, all of these possible scenarios added to the risk of a nuclear project -a risk that the nuclear utilities and their bankers willingly took, but won't take anymore, because the risk is simply too great. Now, the nuclear companies want us to take the risk, and themselves to take the rewards if things work as they hope they will. It's a concept that turns capitalism on its head -forcing people with essentially no voice to take all the risks, and those taking none of the risks to avail themselves of all the potential profits- having protected themselves against any possible losses. UniStar calls that an "innovative business model." But perhaps a better phrase would be "robber baron capitalism."

Sources:

1- Constellation Energy Form 10-K, Fiscal Year ending December 31, 2007; filed with U.S. Securities & Exchange Commission, February 27, 2008

2- About UniStar Nuclear energy LLC, www.unistarnuclear.com/about.htm

3- Lewis L. Strauss, Atomic Energy Commission Chairman. Speech to the National Association of Science Writers, New York City, September 16, 1954 [New York Times, September 17, 1954]

Contact: Michael Mariotte, NIRS Washington

THE ARGENTINE-BRAZIL NUCLEAR AGREEMENT; ENERGY OR GEOPOLICY?

The creation of a binational nuclear energy agency will be announced on September 6th in Recife (Brazil) by the Presidents of Brazil and Argentina. This new company would not only produce electrical energy but also process the uranium, for medical and agricultural use and its possible use in atomic submarines, according to Argentinean press releases. The company would not be limited to the geographical area of these two countries, but it is to be expanded to the rest of South America, where according to the Brazilian government, between 12 and 15 nuclear power stations would be built before 2030.

(676.5889) G. Honty - Alfredo Tranjan Filho, president of Brazil's Nuclear Industries, said to the daily *O Estado de San Pablo* that "it would be more efficient to establish a broad binational agency, dedicated not only to uranium enrichment, but also to other opportunities and needs of the two countries and the wider market of South America, in areas like health, agriculture and radiomedicines." The agency would become one of the global providers of enriched uranium, one of the goals of the Brazilian Government, according to Tranjan. Besides plans from Chile, Uruguay, Peru and Venezuela to set up nuclear power stations, Argentina has two power stations in operation, it pretends to finish Atucha II and it is planning to set up two more. Brazil still has Angra I and Angra II, and is planning to start up Angra III in 2014 and other six power stations until 2030."

This binational agency is one of the 17 agreements reached in the meeting of presidents last February 22 when the Nuclear Energy Binational Committee (Coben, for its Spanish acronym) was announced. However, this association does not have the full approval of Brazilian authorities, particularly from the Navy, "there is no Brazil-Argentina guideline in which the Brazilian Navy is involved," answered the Centre of Communication of the military institution to the daily *Estado de Sao Paulo*.

Lula's Government not only has problems with the Navy as regards to the nuclear plans. While different states compete for the location of new plants, the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA, for its Brazilian acronym), the agency that gives environmental authorizations, has passed the judgment that Angra III will be authorized only when it has found a definite solution to store the nuclear waste produced by the plant, among other conditions. [see box] Edison Lobão, Minister of Energy, said that waste storage is a problem which has not been solved anywhere in the world. "The Ministry of Environment can-

Conditions on completion of Angra III.

The completion of Brazil's Angra 3 reactor looks more doubtful

after Carlos Minc, the country's environment minister, set 60 tough conditions for the project. Minc announced his conditions on July 23. He said that the decision to complete the reactor was taken before his time in office, and that the alternative to discussions was to 'adopt more rigorous conditions' for the project.

Among the 60 conditions, set by Minc, are that Angra owner Eletronuclear must present a 'definite' solution for the final storage of high-level radioactive waste before the unit begins operation. 'The ball is now with the proponents of the project,' Minc said, concluding: 'Our mission is to make sure that the conditions are fulfilled.'

Among various social integration, educational and environmental initiatives, Eletronuclear must:

- Create an independent laboratory to monitor radiation in addition to current measures

not ask for a solution that does not exist yet. Brazil is not doing anything inferior or superior to what is done in the 440 nuclear power stations around the world" replied Lobão. That is, as there are 440 problems to be resolved, it does not matter to add another one.

The Nuclear Energy Commission (CNEN, for its Brazilian abbreviation) and Eletronuclear committed themselves to find a solution before 2010 to safely store nuclear wastes for '500 years', not exactly a definite solution considering the wastes remain radioactive for many thousands of years. Carlos Minc, Minister of Environment, has not agreed with the solution yet, but all indications are that it will be accepted. Lula gave 60 days to solve the problem of the environmental license of Angra III, while the time line set by the government indicates 2014 for starting up, and the pressure on IBAMA is huge.

The announcement made by the Presidents of Brazil and Argentina is worrying and also unrealistic, if we consider the experience these 2 countries had to face during the construction of their plants, Atucha II and Angra III, which have been stopped for more than two decades. The only valid explanation is that the bid of Brazil is actually more related to a geopolitical strategy, aimed to get into the "club" of nuclear powers, and has a military goal rather than an energy-oriented one. Brazil includes, not in vain, in the nuclear package a uranium enrichment plant, a necessary instance to supply nuclear weapons.

(This analysis is written by Gerardo Honty. He is an information analyst of energy and climate change in the Latin-American Centre of Social Ecology (CLAES, for its Spanish acronym) at Montevideo, Uruguay)

Source: News Services "Alai-amlatina", 28 August 2008

Contact: Pablo Bertinat at WISE Argentina. <wiseros@ciudad.com.ar>

- Invest at least BRL50 million (US\$31 million) in the 'beautification' of the cities of Angra dos Reia and Paraty
- Assume the maintenance costs of the Tamois Ecological Station and the 100,000 hectare Serra da Bocaina national park
- Present studies on the possible effects of low-dose radiation from Angra on nearby populations in collaboration with the Ministry of Health's Fiocruz department

The requirements were signed off on 23 July as part of the 'pre-licence' for completing Angra 3 by Roberto Messias Franco, president of the Brazilian Institute of Environment and Renewable Natural Resources (Ibama). Minc said that all such licenses in future would come with similar conditions.

Minc was a founder member of the Brazilian Green Party but later changed to the Workers' Party of current President Luiz Inácio Lula da Silva. From November 2006 he has served in the environment ministry, becoming minister on 14 May after the resignation of Marina Silva. His views on nuclear power would seem to be rather at odds with those of Lula.

Source: WNN, 24 July 2008

GREENPEACE: SUSPENSION OF CONSTRUCTION EPR

The much plagued Finnish project to build a first-of-its-kind EPR is again under huge pressure after it became known that so-called welding has taken place without appropriate supervision. Greenpeace revealed on August 13 that the company responsible for construction in Olkiluoto, Bouygues, has violated basic safety procedures in Olkiluoto. In the meantime, Bouygues has also been caught for illicit practices in Flamanville, France, where the same French EPR reactor model is being built.

(676.5890) WISE Amsterdam

- Greenpeace presented a set of documents showing, that the welding of the reactor building in Olkiluoto continued for at least half a year without required welding guidelines. Mandatory testing of welds was not done either and there has been no qualified supervision of welding works for months. Bouygues has already admitted to the latter violation. The defects concern also load bearing welds that are critical for the strength and durability of the structure.

Independent nuclear safety expert Dr. Helmut Hirsh [1] has reviewed the documents and concluded that the safety violations are “a clear case of bad practice and an indicator of bad safety culture”, and give “reason for serious concern regarding the resistance of the reactor building of OL3”, increasing the risk associated with external events like earthquakes, blast waves from explosions or missile impact.

The technical documents, which include Welding Procedure Specifications (WPS), show that the French builder Areva allowed welding work to be carried out for more than a year without approved procedures. The quality of welds has not been verified and test specimens from each batch of welds were not collected. Given that there were and still are no qualified personnel supervising the welding, the lack of standards is even more alarming.

The French authorities seem to have taken a stricter stance towards the neglect of nuclear safety than their Finnish counterparts. Construction was suspended in Flamanville for a month in summer because of repeated violations. In Finland, similar problems went on for years without any such intervention. In France information on detected safety problems is published online. The Finnish Nuclear Safety Authority STUK still refuses to publish

even a list of the 2200 quality problems detected in Olkiluoto, despite numerous requests.

TVO started construction of Olkiluoto 3 in 2005. The welding of steel reinforcements of concrete started during 2005. Bouygues hired Tapio Kettunen in January 2005 as their coordinator responsible for welding.

On August 19, the Finnish Broadcasting Company YLE had an interview with Kettunen. He sees the attitude of the managers and inadequate work instructions as the largest problems of the project. Here some illustrative bits and pieces of the interview;

Interviewer: Did the welders have welding procedure specifications when you came in?

Kettunen: No they did not.

Interviewer: Well, did you start to prepare them?

Kettunen: Yes, I started it after half a year.

Interviewer: Before that, welding had been done without specifications?

Kettunen: Mm-m.

Interviewer: Well then, how did the welders know how to weld if there were no welding procedure specifications available?

Kettunen: I don't know.

Interviewer: So you mean they made it up while welding?

Kettunen: Certainly.

Interviewer: Didn't you push Bouygues management, saying that things are not right?

Kettunen: That's what I did all the time.

Interviewer: You left your position as a welding coordinator in Olkiluoto in September 2007. Why?

Kettunen: Everyone has a professional ethic. Surely everyone wants to do their best. Working there you were not allowed to do that. You were just a

rubber stamp.

Then the journalist went on to talk with STUK, the responsible Finnish nuclear safety authority, which is to make sure that common rules are adhered to at the world's most demanding construction site.

Interviewer: Are you happy with what you have seen at the construction site and what has been reported to you?

Petteri Tiippana, STUK: Yes, as far as load bearing welds are concerned.

But in general, already a year ago there were clear defects in the so called installation welding of steel reinforcements. Too high power and voltage settings were used when welding attachment plates. Thereafter, there haven't been as many of these problems.

Interviewer: Not as many, but they still occur?

Tiippana: Well, I won't say they haven't occurred, but not as much as a year ago.

And then the question is of course; how important is welding? And so the journalist went on, asking Professor Jukka Martikainen this simple question. He is the foremost expert in welding in Finland. His statements are used e.g. in international disputes and court cases related to quality of welding.

Interviewer: Why is it important that a welder has the welding specification when he works?

Martikainen: There are a couple of things. They allow him to see what kind of task he is given, what kinds of welds and joints there are, how many passes, so there is this side to it that is important for performing the task.

The other thing is the metallurgical side. The welding specifications

have very often, and in this kind of construction always, a lower and upper limit for heat input. If those limits are surpassed, it can result in damage. Not necessarily, but can.

These days, welders change very often, and different companies are working at the same site, there are subcontractors etc., the WPS are unconditionally required. Otherwise, the result can be even a catastrophe.

Back to STUK:

Interviewer: Tapio Kettunen started preparing welding procedure specifications for Bouygues in spring 2006. The first specifications were submitted to Areva and TVO for approval in autumn 2006. STUK approved first specifications in the beginning of 2007. By then, welding had been going on within the reactor for a year and concrete had already been poured over some of the welds in concreting operations that took months. How can this be possible?

Tiippana: That is a good question. They have considered the procedures they have followed as adequate. And they have thought that papers can be prepared afterwards.

Interviewer: And you have been aware of this?

Tiippana: No, we haven't been. As I said there is a certain order in which these things have been found out.

Interviewer: Have you been deceived?

Tiippana: [Sigh] Well that needs to be checked very carefully, these documents need to be thoroughly evaluated. If there are doubts about the competence of these people, very need to check thoroughly if we have been lied to.

Time to ask TVO some questions:

Interviewer: Do you thrust Bouygues?**Martin Landtman**, (Head of OL3 project in TVO): We thrust in the supplier of the plant and its subcontractor absolutely. That does not mean we do not control them.

Interviewer: I have a document where

Bouygues management forbids their employee from telling you or Areva about anything that has taken place at the construction site, threatening him with an official warning.

Landtman: I would be very eager to see that document.

Interviewer: I have it here.

Landtman: I would be very eager to see it. This does not happen at a nuclear construction site.

[The document is handed over to Landtman]

Landtman: I will not read it here. I will have to look at it separately. I cannot comment on it straight away.

According to information compiled by YLE, the confidentiality rule that binds employees and subcontractors of Areva is interpreted in a way that covers safety problems and employees rights violations alike. In addition, Bouygues management has specifically and repeatedly forbidden their employees to report quality problems to Areva and TVO inspectors. Workers breaking the code of silence have been punished with official warnings and even dismissal.

The Olkiluoto 3 nuclear reactor must withstand extreme heat and radiation as well as possible terrorist attacks and human errors. The citizens have the right to demand worlds best safety from the builders of the worlds largest nuclear power plant.

This is the latest in a series of errors in the construction of Olkiluoto 3, a French designed EPR. Even though work only began in 2005, the EPR reactor in Finland is more than two years behind schedule, costs have doubled since the initial estimate and more than a thousand problems have been reported including poor quality concrete, defective welding on the containment and key components not meeting the required criteria [2]. At the end of July, a fire at the construction site caused extensive damage to the outer and inner wall structures of the reactor building [3].

Both existing EPRs being built – Olkiluoto 3 and Flamanville 3 in France – are beset with safety problems, delays and spiralling costs. Despite this, French President Sarkozy and the state owned companies Areva and Électricité de France (EDF) are trying to sell French reactors to numerous countries including to Brazil, Canada, China, South Africa, Turkey, United Kingdom and the United States.

Notes:

[1] Dr. Helmut Hirsch has about 30 years of experience as a nuclear expert. He has worked for the Austrian Federal Government as well as for German State Government and municipal administrations. Since 1990, he has been a member of the Austrian Environment Ministry's Nuclear Advisory Board. Recent work includes technical support for the Austrian monitoring process of the Czech Temelin nuclear power plant. He is a member of the Organization for Economic Co-operation and Development's Nuclear Energy Agency expert group.

[2] Greenpeace Factsheet EPR - European Pressurized Reactor <<http://www.greenpeace.org/international/press/reports/epr-factsheet>>, June 2008

[3] More information on the fire http://weblog.greenpeace.org/nuclear-reaction/2008/08/olkiluoto_finnish_fire_followu.html
More information: In depth briefing <http://www.greenpeace.org/raw/content/international/press/areva-finland-violations.pdf>

Source and contact: Lauri Myllyvirta, Energy Campaigner, Greenpeace Finland
Email: lauri.myllyvirta@nordic.greenpeace.org
Tel: +358 50 3625 981
skype laurimyllyvirta
Web: <http://www.greenpeace.fi>

IN BRIEF

Phase-out in Spain?

Last issue (675.5885) we run the article ‘Nuclear power in Spain – Closer to a phase-out?’ There is one thing to add to the otherwise excellent overview.

At the time of the Chernobyl accident the Spanish private electric utilities were experiencing huge financial problems because of their big investments in nuclear power. For this reason a restructuring process started. Private utilities with nuclear investment were taken over by Endesa, the large public owned utility. The energy minister Claudio Aranzadi (Socialist Party) announced in May 1991 that no new nuclear plants would be commissioned before 2000. A new electricity law passed by the Spanish Parliament in 1995 led to the definitive cancellation of the five nuclear plants whose construction was frozen by the Socialist government in the 1984.

The transposition of the EU Directive on the Liberalization of the Electricity Market became the Spanish Electricity Law 54/1997. Since then there is no barrier to build new nuclear reactors, because ‘in the electricity generation, it is recognized the right to free installation of power generation and the operation of the electricity system is organized under the principle of free competition. The economics of the electricity system is based on the free market.’

The current Spanish Government (Socialist Party), elected in 2004 and re-elected in 2008, announced that it will increase generation from renewables and start planning the phase-out of nuclear power. In August 2005, the socialist government adopted a new Renewable Energy Plan, because the old one was not achieving the planned objectives, in order to reach the EU target of 12% renewables by the year 2010.

Source and contact: Dr. Josep Puig, Grup de Científics i Tècnics per un Futur No Nuclear (GCTPFNN)

Email: gctpfnn@energiasostenible.org

www.energiasostenible.org

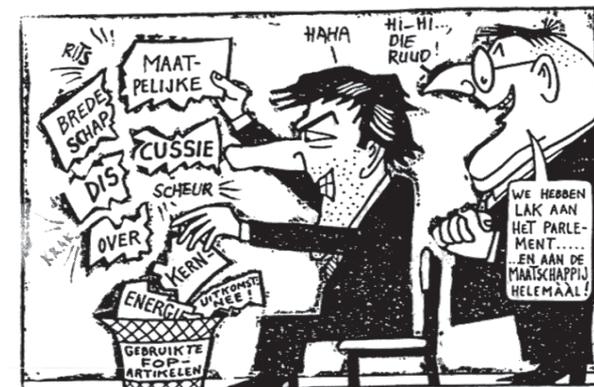
23 years ago... Its June 1985. Members of the radical action group ‘The revenge of De Brauw’ , broke in to the Ministry of Economic Affairs and successfully manage to take away boxes full of paper, including highly confidential documents. Although the government had just published it’s ‘wish’ to built ‘at least’ two nuclear power plants, the documents showed the government was secretly preparing deals with local authorities about site locations, subsidies and waste storage. This was big news as it was just after the results of a two-year national debate (chaired by De Brauw, who died late 1984), initiated and paid for by the government about the question whether the Netherlands should go for the nuclear path or not. This whole debate was started after years of highly politicized and polarized debates which split the whole Dutch society into supporters and non-supporters of nuclear power. The outcome was very clear; a vast majority of the Dutch people did not want more nuclear

power.

The timing of the action was perfect and the responsible Minister was in deep political trouble. So far so good. There was some debate about the fact that the papers were stolen but nationwide all newspapers and other media published the papers and most comments were supportive. The fact that the Ministers had been lying to the parliament was much more important. Although the official decision not to build new nuclear power plants was taken a few months later, a few days after the Chernobyl disaster, the publication of the papers in June 1985 were instrumental in blocking earlier decisions.

Then, in August 2008, the former activist, now member of the Parliament for the Greenleft opposition party, published a book in which he also admitted that he was one of the activists, back in 1985. After two weeks of severe campaigning by the radical right-wing media the MP had to step down.

The current Minister of Environmental Affairs, Mrs. Cramer, was also under pressure for the fact that she supported an advertisement in a newspaper, a year after publication of the stolen papers. The ad stated that all the people and organizations



Opland, Volkskrant 20.6.85

Prime-minister Ruud Lubbers tearing up the Broad Social Discussion-Report and Minister of Economic Affairs van Aardenne giggling and saying: "A fat lot we care for parliament ... or for the whole damn society."

(in 2008 Lubbers is still lobbying for nuclear power plants)

that undersigned it defended the right for media to publish such papers, even if they had been stolen. Mrs. Cramer was chair of the board of Milieudefensie, Friends of the Earth Netherlands, in 1986.

On September 2 she had to defend her position in a debate in the parliament. She said she did not recall giving permission to have her name under the statement and advertorial but she also stated that she actually would have and still would support such a statement. She was supported by the three parties forming the ruling coalition government and did not have to step down. The debate about the Minister took place on the same day that one of the coalition partners, the Christian Democrats (CDA) announced they want more nuclear power stations to be build in the Netherlands.

Our guess is that they in fact are quite well underway in preparing the decision to build a new nuclear power plant. So we would say, lets visit the Ministry again...

Source and Contact: WISE Amsterdam

Greece: No nukes! Greece will continue to utilize lignite while, at least until 2020, it does not plan to include nuclear energy in its energy planning, declared Development Minister Christos Folias after the first informal meeting under the French European Union Presidency of the council of ministers of Environment and Energy.

To a question on Greece's position concerning nuclear energy and the attempt on the part of France to promote the advantages of constructing nuclear power stations he responded "our position is clear. Of course France has a long tradition with nuclear power stations and it is natural that it should want to sell them. I want to make clear yet again that nuclear power is not included in Greek energy planning up to the year 2020". According to the Development Minister "the great strategy that we have forged is the attempt to develop renewable energy sources."

ACDN (Fra.), 22 July 2008

Yucca Mountain: 67% cost increase. The US Department of Energy (DoE) has issued a revised total cost estimate for the planned national used nuclear fuel and high-level radioactive waste (HLW) repository at Yucca Mountain, Nevada. The latest estimate puts the cost of research, construction and operation of the geologic repository over a 150 year period - from when work started in 1983 through to the facility's expected closure and decommissioning in 2133 - at US\$96.2 billion (in 2007 dollars). This is a 67% increase on the previous published estimate in 2001 of US\$57.5 billion. Excluding inflation, the new estimate increased 38% to US\$79.3 billion. The new estimated cost of US\$96.2 billion includes some US\$13.5 billion that has already spent on the project; US\$54.8 billion for the construction, operation and decommissioning of the repository; US\$19.5 billion for transportation of the used fuel; and, US\$8.4 billion for other program activities.

The USA has been planning the repository for many years. Since 1977, when it ruled that used fuel was to be treated as waste and could not be reprocessed to recover uranium and reduce its volume, the government has had a responsibility to provide final disposal of the fuel in a deep geologic disposal facility. According to the 1982 legislation, the DoE was supposed to start accepting fuel from utilities early in 1998, but its failure to provide a repository on time has meant that the fuel has had to be stored at reactor sites.

Yucca Mountain was approved by Congress and President Bush in 2002 as the site for the USA's first permanent used fuel and high-level waste geologic repository. At the beginning of June, the DoE submitted a licence application to the Nuclear Regulatory Commission (NRC) for the construction of the repository.

The current projected completion date for the project is 2017, but the fate of the project would be with the next US President. The Democratic candidate, Barack Obama, "believes that Yucca Mountain is not an option" for long-term management of wastes, while Republican candidate John McCain would try to establish an international radioactive waste management scheme which could make Yucca Mountain unnecessary.

World Nuclear News, 6 August 2008

NSG reached no decision on India-US deal. Just as it seemed headed for completion, the India-United States nuclear deal has run into big trouble. Indian officials had thought the US-drafted motion to get a waiver for India from the Nuclear Suppliers' Group's nuclear trade rules would "sail through." Getting consensus on it would be as smooth as "a knife going through butter." A handful of dissenting member-states would express reservations. Soon thereafter, Germany, the NSG chair, would announce a "consensus." The US Congress would ratify the deal by September. India would have its Nuclear Nirvana. Yet, more than 20 of the NSG's 45 members expressed reservations. A vocal bloc led by Austria, New Zealand and Ireland proposed more than 50 amendments to bring the waiver in line with the Group's overwhelming non-proliferation objective. The NSG, which works by consensus, reached no decision. The dissenters won the day. Early September the next meeting of the NSG will take place.

It's not good enough for India to offer a unilateral testing moratorium. Countries like Ireland, the Netherlands, Switzerland, Sweden, Norway, Finland, Denmark, Austria and New Zealand want a more robust commitment: no nuclear commerce with the world if India tests again. These countries may yet drop or dilute their conditions. But they will have been coerced through US arm-twisting, or cajoled through lucrative contracts from "emerging economic giant" India. But some of them don't have a big stake in Indian contracts. Some may resist US pressure too.

We don't know if the dissenters will stand up in the NSG, though that's highly likely. But the conditions they propose are potential deal-breakers: periodic review of India's compliance with non-proliferation commitments; exclusion of uranium enrichment and spent-fuel reprocessing technologies from exports; and most important, end to nuclear trade if India conducts a test.

India insists on a "clean and unconditional" waiver, with only "cosmetic" changes in the US draft. So unless the conditions vanish, India must sign a bad deal. Or, India loses the deal altogether in the Bush administration's term.

Praful Bidwai, Daily Star (India), 2 September 2008

UK: money for renewables to decommissioning authority. At least £15 million (US\$27 mln. or 19 mln. Euro) intended for sustainable energy grants from the Department for Business Enterprise and Regulatory Reform was instead given to the Nuclear Decommissioning Authority. The money was part of an urgent package of funding given to the NDA in 2007-08 to make up its shortfall in income which was threatening decommissioning work.

N-Base briefing 580, 20 August 2008

Weapons plutonium fuel test fails. Citing the recent failure of an experimental plutonium fuel assembly test at the South Carolina Duke Energy's Catawba nuclear plant, two watchdog groups called on the Department of Energy (DOE) to suspend a risky, multibillion dollar program that would use 37 tons of surplus nuclear weapons plutonium for U.S. nuclear reactor fuel. Friends of the Earth (FOE) and the Union of Concerned Scientists (UCS) discovered that the test, scheduled to run for four-and-a-half years to demonstrate the safety of mixed-oxide (or MOX) fuel, had to be aborted after only three years. The fuel assemblies, produced by the French state-owned company Areva, grew abnormally long in the reactor. This excessive growth is a safety hazard, the groups said, because it can deform and damage the MOX fuel. Duke Energy informed the Nuclear Regulatory Commission (NRC) about the aborted test in a June 10 report.

"The failure of the plutonium fuel experiment is another major setback for the MOX program, and will further increase the already considerable cost overruns, delays and risks," said Tom Clements, FOE's Southeastern Nuclear Campaign coordinator. "Congress needs to pull the plug before even more taxpayer money is wasted."

"DOE should not cut corners in safety testing," said UCS Senior Staff Scientist Edwin Lyman. "To go forward with MOX now, Areva would have to redesign the MOX fuel, and Duke would have to repeat the entire experiment, delaying the testing program by at least eight years. DOE should instead dispose of the plutonium directly by mixing it with radioactive waste and encasing it in glass, which would be safer and cheaper than continuing the MOX program." Lyman further noted that the French facility where Areva produced the MOX fuel from U.S. weapons plutonium is now closed, potentially leaving the DOE without a test fuel supplier.

The abnormal fuel assembly growth that terminated the MOX experiment has broader safety implications. The NRC has allowed dozens of Areva uranium fuel assemblies with the same flaw to remain in other U.S. reactors, including Three Mile Island-1 in Pennsylvania, Davis-Besse in Ohio, Oconee in South Carolina, and Crystal River in Florida. Areva told the NRC in April that it has not as yet determined the cause of the problem, although it may be related to an experimental alloy known as "M5" Areva uses in the "guide tubes" where the control rods that shut down the reactor are inserted. Whatever the cause, the problem indicates that the NRC's licensing process for new fuels is inadequate, the groups said.

Press release FOE / USC, 4 August 2008

UK: Waste containers will fail. Thousands of stainless steel radioactive waste containers are likely to corrode and fail according to an unpublished Environment Agency report published in the Independent. The Environment Agency has to approve any proposals for getting rid of the waste. The report says tens of thousands of the containers are made of poor quality steel, internal surfaces have not been treated correctly and seals are not good enough.

Many thousands of containers are simply being stored above ground, mainly at Sellafield, while the Government and the nuclear industry decide what to do with them. On present plans it is assumed they will remain there for up to another 150 years before being placed in a repository underground. It will take another 50 years to fill the repository, which will then remain open for another 300 years, while the waste is monitored, before being sealed and buried. Officially containers are designed to last for the full five centuries before the repository is closed. But many tens of thousands of containers already in store have been produced to less exacting specifications, which do not even attempt to make them safe for 500 years. The report adds that the implications of this do not seem to have been "fully considered".

Independent (UK), 24 August 2008

Worries Of Radioactive Leaks From 'Concrete Cap' In Marshall Islands. Thirty years after the United States built a massive concrete dome in the Marshall Islands to cap highly radioactive waste from nuclear weapons testing, the facility has cracks that concern islanders who fear radiation is leaking into the lagoon of Enewetak atoll, the Sydney Morning Herald reports. The cap, about the size of three U.S. football fields, was built over a nuclear test bomb crater that was filled in with radioactive waste, including topsoil from other islands in the atoll and test towers. Cracks in the Enewetak atoll concrete cap were first discovered 18 years ago, but a recent inspection by a U.S. Department of Energy engineer said they were only hairline in size and did not pose a threat to islanders, who were allowed to return to the atoll's southern islands in 1980. Enewetak was the site of 43 of the 67 U.S. nuclear weapons tests conducted in the Marshall Islands between 1946 and 1958. The other test site was Bikini atoll.

Pacific Magazine, 19 August 2008.

Western Australia: U-mining ban? Leading up to a state election in Western Australia, the Labor premier, Alan Carpenter, has said that if re-elected on 6 September the government will legislate to ban uranium mining. At present uranium mining is not allowed in the state, despite the Labor party at a national level changing its partial opposition to blanket approval in April 2007. Carpenter voted for the change at that time. Mining companies have taken the view that since Labor party attitudes generally have been swinging to become more positive towards uranium and its use for electricity generation, then it was only a matter of time before uranium could be mined in Western Australia.

Greens in parliament have been calling for a law to ban uranium mining for some time, but only four months ago Carpenter parried this, saying that it would raise major compensation issues. The government then voted with the opposition to defeat a private member's bill to legislate for a ban. In what the media have called a "spectacular policy reversal" only 16 days after saying that he didn't see the need for a ban, Carpenter now says that he does not believe compensation would be payable to aggrieved mining companies who hold valid leases.

World Nuclear News, 1 September 2008

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). 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.

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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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WISE/NIRS offices and relays

WISE Amsterdam

P.O. Box 59636
1040 LC Amsterdam
The Netherlands
Tel: +31 20 612 6368
Fax: +31 20 689 2179
Email: wiseamster@antenna.nl
Web: www.antenna.nl/wise

NIRS

6930 Carroll Avenue, Suite 340
Takoma Park, MD 20912
Tel: +1 301-270-NIRS
(+1 301-270-6477)
Fax: +1 301-270-4291
Email: nirsnet@nirs.org
Web: www.nirs.org

NIRS Southeast

P.O. Box 7586
Asheville, NC 28802
USA
Tel: +1 828 675 1792
Email: nirs@main.nc.us

WISE Argentina

c/o Taller Ecologista
CC 441
2000 Rosario
Argentina
Email: wiseros@ciudad.com.ar
Web: www.taller.org.ar

WISE Austria

c/o Plattform gegen Atomgefahr
Roland Egger
Landstrasse 17
4020 Linz

Austria

Tel: +43 732 774275; +43 664 2416806
Fax: +43 732 785602

Email: post@atomstopp.at
Web: www.atomstopp.com

WISE Czech Republic

c/o Jan Beranek
Chytlalky 24
594 55 Dolni Loucky
Czech Republic
Tel: +420 604 207305
Email: wisebrno@ecn.cz
Web: www.wisebrno.cz

WISE India

42/27 Esankai Mani Veethy
Prakkai Road Jn.
Nagercoil 629 002, Tamil Nadu
India
Email: drspudayakumar@yahoo.com;

WISE Japan

P.O. Box 1, Konan Post Office
Hiroshima City 739-1491
Japan

WISE Russia

P.O. Box 1477
236000 Kaliningrad
Russia
Tel/fax: +7 95 2784642
Email: ecodefense@online.ru
Web: www.antiatom.ru

WISE Slovakia

c/o SZOPK Sirius
Katarina Bartovicova
Godrova 3/b
811 06 Bratislava
Slovak Republic
Tel: +421 905 935353
Email: wise@wise.sk
Web: www.wise.sk

WISE South Africa

c/o Earthlife Africa Cape Town
Maya Aberman
po Box 176
Observatory 7935
Cape Town
South Africa
Tel: + 27 21 447 4912
Fax: + 27 21 447 4912
Email: coordinator@earthlife-ct.org.za
Web: www.earthlife-ct.org.za

WISE Sweden

c/o FMKK
Barnängsgatan 23
116 41 Stockholm
Sweden
Tel: +46 8 84 1490
Fax: +46 8 84 5181
Email: info@folkkampanjen.se
Web: www.folkkampanjen.se
c/o FMKK

WISE Ukraine

P.O. Box 73
Rivne-33023
Ukraine
Tel/fax: +380 362 237024
Email: ecoclub@ukrwest.net
Web: www.atominform.org.ua

WISE Uranium

Peter Diehl
Am Schwedenteich 4
01477 Arnsdorf
Germany
Tel: +49 35200 20737
Email: uranium@t-online.de
Web: www.wise-uranium.org

WISE/NIRS NUCLEAR MONITOR

c/o WISE Amsterdam
PO Box 59636
1040 LC Amsterdam
Netherlands

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