

# NUCLEAR MONITOR

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## MONITORED THIS ISSUE:

# FORMER SAFETY CHIEF BLOWS WHISTLE ON POOR SAFETY CULTURE

## Interview with Lars-Olov Höglund on the Forsmark incident

Work on an interlocking station adjacent to reactor 1 at Sweden's reputedly safest nuclear installation put half the control room in the dark. Attempts to get reserve generators on line failed, and for 23 minutes no one in the control room could be sure what was happening in the reactor or whether a meltdown could be avoided. Eventually, an engineer from Forsmark 2 -which fortunately was idle for scheduled repairs, managed manually to get diesel-supported generators to kick in. It was, according to Lars-Olov Höglund, a former safety chief at Forsmark, sheer luck that saved the day.

**(649.5761) WISE Sweden** - Just how close Forsmark came to a meltdown and explosion likely of the magnitude of Chernobyl, no one can say. The only thing everyone can agree on that it was entirely too close, says Lars-Olov Höglund.

Höglund is one of very few members of the nuclear community who has spoken out on faults in the so-called culture of safety in the Swedish nuclear industry. Now an independent consultant Höglund complains of corners being cut, of poor morale, of understaffing and even outright incompetence on the part of staff charged to keep a Swedish Chernobyl from occurring. Many nuclear engineers are worried, he says; few choose to speak out. Höglund says he is not necessarily against nuclear energy per se. What bothers him is the commercialization of such a risk-filled technology. The profit motive is safety's worst enemy, he says. A maverick, he is

well-known in Sweden for his unflinching criticism of poor safety culture in the industry. He has opened a number of court cases and seen to it that latent risk factors receive public attention.

Höglund chose to speak out on the events at Forsmark when he read an article in Sweden's leading daily newspaper, Dagens Nyheter, 1st August. The article gave him the distinct impression that "someone was trying to sweep the incident under the carpet". That "someone" was apparently Forsmark's management, who were quick to claim that the problem had been identified and dealt with, and urged the regulatory authority to allow the reactor to come back on line only 5 days after the near-catastrophe. The claim was unfounded. A week further along, the problem has been localized to a rectifier that had been incorrectly installed sometime in the 1990s.

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Nuclear safety officers take two phenomena extremely seriously: common cause failure (in essence: when multiple failures arise out of the same cause) and systems interdependency. The events at Forsmark combine both, says Höglund.

### Who's to blame?

Accusations and counter-accusations have filled the press since the incident became known. I asked Lars-Olov Höglund to help me sort them all out.

AEG, supplier of the equipment, has been accused of withholding vital information. In Lars-Olov Höglund's estimation, AEG's part in the drama is minimal. AEG had no responsibilities in this case beyond the manufacture of the equipment, he says.

The real problem - which has far-reaching implications - is that Forsmark and its owner, Vattenfall, no longer have design-competent staff who vet planned installations beforehand. All too much is left to trial and error, Höglund says. And not only at Forsmark. This is only the latest instance of what Höglund regards as rampant nonchalance.

A case in point: Readers of the Monitor may recall a problem at Barsebäck 2 a couple of years ago, where severe fluctuations in the water pressure in the reactor's cooling system had been noted four whole months before the plant even reported the problem to SKI, let alone tried to do anything about it. The problem arose in the dead of winter, when electricity prices were sky-high. The "cost" to the company of stopping the reactor and removing what turned out to be pipe fragments from the tubes was simply too high.

Returning to the present, even the fact that work was allowed to be done on the interlocking apparatus while Forsmark 1 was on line is a breach of what were once standard precautions, Höglund warns.

The regulator, SKI, also bears a good share of responsibility, not for the incident, but for the state of the culture of security, that is, the prevailing psychological climate surrounding issues of safety.

"Control is good, good faith is better." The phrase may sound Orwellian, like something out of Animal Farm, but it is actually how SKI sums up its regulatory philosophy. SKI is extremely careful not to spoil the cooperative spirit between regulator and the industry. In actual fact, SKI is so poorly staffed that they are dependent on the industry for information, Höglund explains. SKI's approach to regulation is essentially the honor system.

### SKI's mandate: reactor safety or PR-consultancy?

But the question is, does the regulator even want to regulate? More often than not -- and even in the case of this "near-Chernobyl" -- SKI nurtures the myth of "Swedish nuclear energy, safest in the world". At the same time, SKI is very liberal when it comes to allowing Swedish reactors ample time (in some cases unlimited) to adapt to new, stricter regulations. Lars-Olov Höglund asks: "What good are stricter rules, if nobody needs to follow them? It's a little like the old Soviet Constitution -- the most progressive in the world when it came to civil rights and liberties!"

Nor does Höglund have much respect for SKI's risk assessments and scenarios. "Any eventuality that might have far-reaching consequences is assigned zero probability. Otherwise, the reactors would not be allowed to operate. Someone ought to ask SKI what the probability is that all four reserve power systems fail. I'll bet their answer is zero -- which would say a lot about SKI," Höglund suggests, only half in jest. "Much of the in-data is pure conjecture, and not seldom wishful thinking. Of the ten Swedish reactors now in operation, only two are identical. That means that the empirical experience of the reactors' operations is very limited. Therefore, a lot has to be conjecture - and tactics vis-à-vis politicians and Sweden's Environmental Courts."

SKI, for their part, has said that Höglund grossly exaggerates the danger of the incident at Forsmark. The situation was never out of control; the staff kept their heads, acted competently and managed the crisis well.

SKI has been keen to tell everyone that what happened was "only a 2 on the INES scale". That is true, and the rating is accurate, says Höglund. No radioactive emissions occurred, no functions were permanently damaged. But what SKI does not say, is that the INES scale says nothing about the risks involved, about the severity of what might have happened.

Within the Swedish reactor safety community the incident has been classed as a "Group 1 event", the most serious of three categories, where the facility in question must be taken off line until the fault has been corrected. "To go on talking to journalists about the low INES rating and not admit the seriousness of what happened is pure PR 'flak'," says Höglund.

Two other facts besides the Group 1-rating speak for the severity of the incident: 1. Two other reactors have been taken off line just in case they have the same faulty installation. Twin reactor Forsmark 2 remains idle for the same reason. 2. At one point during the black-out a decision was taken to evacuate all personnel who did not absolutely have to remain on duty. No evacuation took place -- for the simple reason that the public address system was blacked out, too.

The thrills and chills of the crisis have now passed. But if Lars-Olov Höglund is right about the culture of safety among owners and operators of Swedish reactors, the implications for our future are no less chilling. Several Swedish reactors -- a couple around 30 years old - are in the process of being upgraded to operate at higher temperatures. Lars-Olov Höglund is apprehensive: "It's like putting a turbo engine into a Volvo Amazon [from the 1970s]. The suspension, brakes and what-have-you just aren't up to it. Add to that, that today's technicians have such a poor understanding of failsafe thinking ... The upgrading necessarily implies poorer reactor safety, bigger risks."

Lars-Olov Höglund's recipe is this: "Stop pouring money into the upgrading of old reactors. Put it instead into entirely new electricity production - maybe nuclear, but why not

windpower? Vattenfall has hardly done a proper job of exploring the possibilities even if they have frittered away a lot of money on it."

We have yet to see what repercussions the incident at Forsmark 1 will have among Swedish policy-makers. One thing is for certain: without whistleblower Lars-Olov Höglund even we in

Sweden might never know the true extent of what happened there.

**Source and Contact:**

Charly Hultén, WISE Sweden

## Indigenous World Uranium Summit and the Nuclear Free Future Award Ceremony Hosted by The Navajo Nation

To be held at **Window Rock, ARIZONA, USA**  
**September 20<sup>th</sup> to 22<sup>nd</sup> & 24<sup>th</sup> 2006**

"The Atomic Age was started by humankind... by humankind it can be ended."

**Agenda**

Develop national and international collaborations and strategic networks  
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Support the Dine' Natural Resources Act of 2005  
Stop nuclear waste dumping at Yucca Mountain and Skull Valley  
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For more information contact: Seventh Generation Fund at +1 707 825-7640 or visit the SGF website at [www.7genfund.org](http://www.7genfund.org) for current Information on the Summit.

# NUCLEAR RELAPSE IN CANADA

**Ontario has embarked on a CAN\$45 billion (US\$33 billion) nuclear renewal that is intended to maintain the province's 14,000 megawatts of nuclear capacity, approximately 50% of the province's current electricity generation, into the indefinite future.**

**(649.5762) Sierra Club of Canada -**

The announcement came despite an intense lobbying effort by numerous organizations to convince the government of the viability of embarking on a soft path of conservation, efficiency and renewables. The nuclear industry chose an apparently more effective way to persuade the government: they hired a former Liberal cabinet minister to do their lobbying.

The decision to refurbish and/or replace the reactors was quickly followed by an announcement that the plan would not be subject to an environmental assessment and only site specific assessments would be done. However, with sufficient room for new reactors at both the Bruce Generating Station on Lake Huron and the Darlington Station on Lake Ontario opponents have little hope of getting a fair hearing, let alone preventing construction through the assessment process. Already Bruce Power which operates the Bruce station has notified the Canadian Nuclear Safety Commissions of its intention to expand the Bruce site.

The government justified its decision by claiming there is a danger of blackouts in the future if construction is not begun immediately. The government used the same argument in the 1970s to justify the construction of the Bruce B and Darlington stations. The result was a glut of electricity in the 1980s and early 1990s that caused the down sizing of Ontario Hydro and the cancellation of its conservation and efficiency programs. It also led to the breakup of Ontario Hydro into several sub parts and briefly establish an open electricity market.

The June announcement also contained a doubling of renewable energy and efficiency targets by the province. However, although the publicly owned Ontario Power Generation was given the go ahead to invest \$45 billion in nuclear there is no clear investment plan for efficiency and the renewables will be left up to the private sector. Prior to announcing this nuclear plan, the government also reneged on their promise to close the coal plants by 2009.

The government relied on a forecast of electricity needs generated by the Ontario Power Authority (OPA) published in December 2005 to justify the nuclear build despite significant questions about the accuracy of the report. The OPA explicitly stated it was "not in a position to recommend long-term conservation targets at this time," due to a lack of information, and it underestimated energy efficiency and the potential for renewable energies. The government decision drew strong criticism and has resulted in challenges to the decision to exempt the plan from environmental assessment. A coalition of organizations is also attempting to make the nuclear plan the focus of a by-election to fill a vacant Toronto seat in the provincial parliament.

**Source and Contact:**

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# TURKEY: LOCAL NUCLEAR OPPOSITION CONTINUES

**On July 25 2000, following a cabinet meeting in Ankara, the then Turkish Prime Minister Bulent Ecevit announced the cancellation of the controversial nuclear power plant to be built at Akkuyu on Turkey's Mediterranean coast. Times, and governments, have changed and the current Turkish government now proposes a new nuclear project, planning three nuclear plants to come online by 2012.**

**(649.5763) Laka Foundation** - The government argues that the nuclear reactors will help reduce Turkey's heavy dependence on expensive energy imports and is currently seeking partners to help finance, build and manage its proposed nuclear project.

Dr. Fatih Birol, Chief Economist at the International Energy Agency said, "Turkey is a wasteful country in terms of energy use. To be able to produce a one dollar item, we spend 2.5 times more energy than in Europe." On July 7, IAEA chief Dr. Mohamed ElBaradei publicly cautioned Turkey: "Extensive and rigorous planning is essential with 'cradle-to-grave' considerations", he stated on his four-day trip to the country. ElBaradei added that the IAEA is willing to help Turkey find the solutions it needed and to improve public understanding of nuclear power.

Since the announcement of the project, the anti-nuclear protests in Turkey have once again gathered force. (See also WISE/NIRS Nuclear Monitor 642.5748 "Turkish activists protest against nuclear future") In Sinop, the chosen location for the country's first reactor, opposition to the proposal is fierce. The site chosen by the government is on the northernmost tip of Turkey, on cliffs where today cows graze lazily beside a lighthouse. On one of the busiest streets in Sinop a group of middle-aged ladies appeal for signatures. They call themselves Mothers Against Nuclear Power. The women have been campaigning ever since the governments' announcement that Sinop had been approved as a possible site for the country's first foray into nuclear construction.

The petition states: "With an instinct of protecting our future and the health of our families and community, we reject the dangerous fait accompli investments made with our tax money and the establishment of both dangerous and expensive nuclear technology in our country and city. We

demand from the government to develop the infrastructure which will lead to the production of energy from renewable sources and the efficient use of existing energy."

'Mothers Against Nuclear Power' is (or has been) active in many other countries: Sweden, Germany, Austria and notably in Mexico where they have been protesting for decades against the Laguna Verde nuclear project.

The locals queue up to add their names to a petition against the proposal. It is already more than 25,000 signatures long. One of them says: "I'm no expert, but I'm sure we can produce healthy energy here using the wind and the sun". Local fishermen are also against the construction and many of the boats in the nearby harbour now carry anti-nuclear posters or stickers. The fishermen claim that the Black Sea is one of the world's richest fishing grounds, with catches from the regions being sent all over Turkey. According to the fishermen, the fish will change their routes due to the increase in water temperature caused when seawater is used to cool the reactor. "The construction means our fishing area will be restricted anyway. And just think about it psychologically: who wants to eat fish caught next to a nuclear plant? It's going to finish this city."

There is another reason fuelling widespread opposition to nuclear power in Turkey. Right along the Black Sea coast, people believe that they were directly affected by the nuclear accident at Chernobyl two decades ago. "I have been working as a doctor here for 13 years and the frequency of cancer cases I deal with has clearly increased, especially among children," explains Doctor Cem Sahan, head of the local Chamber of Doctors. Recent research by doctors at the eastern Black Sea region of Hopa has revealed that 48% of deaths in the town are cancer-related. Dr Sahan believes a survey of Sinop would show a similar picture. Like

many, he blames the radioactive clouds that drifted over Turkey from Ukraine in 1986.

"We are still losing children today because of Chernobyl," anti-nuclear activist Gulizar Kavak claims, between calls to passers-by to join the protest. "I am collecting signatures because I believe nuclear power is dangerous. I want my children to live in a healthy environment. But I am sure our campaign will succeed - Sinop is ours!"

As so beautiful stated on the petition-website: "Those who struggle may not always win, but winners will only be those who struggle."

**Sources:** Nuclear Awareness Project: <http://www.cnp.ca/media/turkey-cancellation-07-00.html>; BBC News online, July 2, 2006; Sinop local group website (where you can also sign the petition) <http://www.sinopbizim.org/kampanya/en.html>

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# ATOMIC WASTE SHELL GAME

## Radioactive Russian Roulette on the Roads and Rails

**The U.S. Dept. of Energy (DOE) claimed victory on May 26, 2006 when the 3,776<sup>th</sup> and final canister of "K-65" uranium processing wastes from the Fernald, Ohio nuclear weapons plant were delivered to Waste Control Specialists in Andrews County, Texas. Fernald operated from 1952 to 1989, the single largest producer of high purity uranium metal for the U.S. nuclear weapons complex (1).**

**(649.5764) NIRS** - The Department of Energy regarded the K-65 wastes as the biggest challenge at its Fernald site "clean up," which it has triumphantly declared complete. (2) However, as NIRS/WISE board member and long-time anti-nuclear watchdog Kay Drey in St. Louis, Missouri has pointed out, this year-long, large-scale DOE waste transport program amounts to no more than a dangerous shell game. After all, the intensely radioactive K-65 uranium ore from the Belgian Congo had first been processed at the Malinckrodt Chemical Works in St. Louis during the Manhattan Project that culminated in the obliteration of Hiroshima and Nagasaki in 1945. This ore contained a remarkable 40 to 50 % uranium, as compared to more typical 1 to 2% uranium in ore. Thus, intensely radioactive daughter products from the decay of uranium-238 and -235 were found in large concentrations in this ore and its byproducts. The K-65 wastes were moved from St. Louis to Fernald in the early 1950s. They were stored in concrete silos for over half a century, but, as DOE has stated, "[f]or decades, the raw ore in the silos posed one of the greatest sources of direct radiation to Fernald workers and has long been a concern for plant neighbors."

An earlier DOE Record of Decision committed to sealing the K-65 wastes into glass logs, but when problems were encountered in the vitrification process, DOE severely weakened its long-term management plans. Instead, the wastes were simply blended with fly ash and concrete and sealed into ½ inch thick carbon steel cylinders, then trucked to Texas. The new waste form was variously described by DOE as "loose grout," a "solid cement form," or a "concrete monolith." (3) In an August 2006 report, the Institute for Energy and Environmental Research has pointed out that "[m]ismanagement and design flaws led to the failure of the vitrification program for silo wastes at Fernald. Instead of fixing the management and design, the DOE

decided to change the waste forms, thereby significantly degrading the expected long-term performance." IEER concludes that "(e)xpediency and short-term gain have driven the process of decision-making about the waste form, resulting in the sacrifice of long-term performance. The DOE's failure to include long-term waste form performance in its decision-making for [contractor] bonuses created a perverse incentive to finish rapidly at the expense of long-term health and environmental protection." As with the depleted uranium wastes resulting from uranium enrichment, IEER urges that the K-65 waste be required to undergo deep geological disposal, due to its severe radioactive hazards that will persist for tens of thousands of years. (4)

Shockingly, however, the K-65 wastes appear bound for shallow land burial. Provided, that is, Waste Control Specialists (WCS) can obtain a permit from the State of Texas to permanently dump the K-65 wastes in shallow surface ditches. IEER reported that its "analysis of WCS's qualifications indicates that it is unqualified to accept large amounts of radioactive waste, much less handle them and dispose of them," and that "[a]s of mid-June 2006, it is unclear whether WCS will succeed in getting any license and what the fate of the waste will be if it does not." (5)

Thus, DOE has simply "shifted radioactive risks" or played an atomic waste shell game, moving nearly 4,000 canisters of intensely radioactive and long-lasting wastes to an "interim" or "temporary" parking lot in west Texas. Drey has pointed out the irony of the K-65 wastes being shipped from Congo to St. Louis in the 1940s, then to Fernald in the 1950s, and now back through St. Louis over fifty years later, to a temporary storage facility in Texas. If WCS does not receive permission to dump the wastes - as IEER argues it should not -- then the K-65 wastes could be shipped through St. Louis yet again, bound for some other storage or

disposal site...To make matters worse, WCS is located above the precious Ogallala Aquifer, further calling into question the appropriateness of burying atomic waste there. Obviously, future generations may question DOE's premature claim of victory and completion of "clean up" at Fernald.

But the nuclear establishment seems willing to risk such shell games even with high-level radioactive waste. In late June, U.S. Sen. Domenici, Republican from New Mexico, shepherded high-level radioactive waste shell game legislation (Section 313 of H.R. 5427) through the Appropriations Subcommittee for Energy and Water Development which he chairs, as well as through the full Senate Appropriations Committee. The legislation would require governors in each state with nuclear power plants to designate a 25 year interim storage site or sites for high-level radioactive waste. However, DOE would be given the authority to override governors' decisions. And if governors refuse to "play the game," DOE could impose a regional interim storage site in that state to store multiple states' wastes. The bill appears poised to be voted up or down on the Senate floor after November's congressional elections.(6)

This bill, if enacted, could launch unprecedented numbers of high-level radioactive waste shipments onto the roads, rails, and waterways, bound for temporary storage sites. Thus, transport risks would be multiplied, as the wastes would have to be moved yet again in the future, if and when a permanent disposal site has been opened. Domenici's "Mobile Chernobyl" bill must be stopped dead in its tracks. Contact your State Governor, State Attorney General, and your U.S. Senators and Representative! Urge them to stop this takeover by DOE of states' decision-making role in managing high-level radioactive wastes!

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**Sources:**

1- See photos of operations at Fernald taken Robert Del Tredichi, published in "At Work in the Fields of the Bomb," viewable at: [www.nuclearfiles.org/menu/library/media/gallery/image/tredici/index.htm](http://www.nuclearfiles.org/menu/library/media/gallery/image/tredici/index.htm). See specifically the photos entitled: Uranium Green Salt; Fernald Feed Materials Production Center; Walking the Derby; Cooling the Derby; and Sampling the Derby.  
2- "Fernald completes Silos 1 and 2 Shipping Operations," Fernald Closure Project (FCP, DOE and Fluor Fernald) press release, May 26, 2006, at [www.fernald.gov/NewsUpdate/PDFs/Sil](http://www.fernald.gov/NewsUpdate/PDFs/Sil)

[os\\_1\\_2\\_ShippingComplete.pdf](#)  
3- "Transporting DOE Silos 1 and 2 Material from Fernald, Ohio," 2005 FCP backgrounder, at [www.fernald.gov/NewsUpdate/PDFs/Silos%201%20and%202%20fact%20sheet%20WCS.pdf](http://www.fernald.gov/NewsUpdate/PDFs/Silos%201%20and%202%20fact%20sheet%20WCS.pdf)  
4- "Shifting Radioactivity Risks: A Case Study of the K-65 Silos and Silo 3 Remediation and Waste Management at the Fernald Nuclear Weapons Site," Annie and Arjun Makhijani, IEER, at <http://www.ieer.org/reports/fernald/fullreport.pdf>  
5- WCS is also slated to accept large quantities of DU wastes from the LES uranium enrichment facility, located just a few hundred meters across the border in New Mexico. NIRS/WISE has

appealed the U.S. Nuclear Regulatory Commission's recent approval of a construction and operations license for LES. See <http://www.nirs.org/les/les.htm>.  
6- An excellent analysis, "Summary of Nuclear Waste Storage Provision in the Fiscal Year 2007 Senate Energy and Water Appropriations Bill," is available upon request from Michele Boyd at Public Citizen, [mboyd@citizen.org](mailto:mboyd@citizen.org) or 202-454-5134.

# U.S NUCLEAR REACTOR IN TEHRAN

**One of the Iranian facilities suspected by the Bush administration to be part of a program to make an atomic bomb is the Tehran Research Reactor, a 5-megawatt reactor at Tehran University. Activities of the centre are part of the nuclear programs concealed from inspections by the International Atomic Energy Agency.**

**(649. 5765) WISE Amsterdam** - When arguing for tough penalties against Iran, U.S.-officials have pointed to activities of the Tehran Research Reactor. John Bolton used the activities of the center as evidence for Iran's "two-decades-long record of obfuscation and deceit" when he informed the U.S. congress in 2004 in his role of senior arms control official.

What they failed to mention is that this reactor has been provided to the Iranians by the United States during the Cold War. In 1967, the U.S. was only too happy to help Iran develop its nuclear capacity. At that time the Shah was in charge, and despite concerns over human rights abuses and lack of democracy of his government, Iran was considered a reliable ally against the Soviet Union. The argument to distrust Iran today, that it does not need to develop nuclear power because of its enormous oil reserves, was not heard of those days.

Another 'overlooked' fact is that the U.S provides the Iranians with weapon-grade fuel for the Tehran Research Reactor - about 10 pounds of highly enriched uranium, the most valuable material to bomb-makers. By now the uranium is burned in the reactor but the spent fuel is still highly enriched and combined with other material could be well used to build a bomb. It is also said to be susceptible to theft.

The main aim of the Tehran Nuclear Research Center is training and producing a cadre of nuclear engineers. Some believe that it is so crucial in the Iranian plans to develop a complete uranium fuel cycle that it would be targeted in an U.S. military strike on Iran. The center is located in the hearth of Tehran.

The Bush administration has portrayed the activities of the center as a sophisticated research program which true mission of making a bomb is skillfully hidden. According to a study by top Iranian scientists however, presented at an international nuclear conference in 2004, the true situation might be less sophisticated. After a serious accident in 2001 the scientists concluded that the quality control of the center was a "chronical disease" and that staff was so poorly trained that they had a weak understanding of "the most basic and simple principles of physics and mathematics." Although the situation might have improved over the past few years the sloppiness at the reactor might have contributed to the troubles between Iran and the IAEA inspectors.

In 2003 IAEA officials inspected the U.S.-supplied reactor. They noted some uranium was missing from two small cylinders. They also expressed concern about activities in the reactor such as

tests involving the production of polonium-210, a radioisotope useful in nuclear batteries but also in nuclear weapons. Iran suggested the missing uranium might have leaked when the cylinders were stored under the roof of the research reactor, where heat in the summer reached 131 degrees Fahrenheit, but the IAEA inspectors found no proof for that. Shortly after this inspection Iran acknowledged it has conducted experiments on uranium in the reactor between 1988 and 1992 - activities that had not been previously reported to the agency. It also confessed the missing uranium has been used in enrichment tests in another facility.

**Sources:** Chicago Tribune (USA), August 23, 2006 / Nuclear Monitor, March 7, 2003

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# SERIES OF FAILURES IN KOEBERG CAUSED BY ILL-DISCIPLINED PERSONNEL

The so-called "bolt in the generator" incident at unit 1 of the Koeberg Nuclear Power Station (December 25 2005) that wrecked the generator has been of great national public interest in South Africa. Public Enterprises minister Alec Erwin has previously told the press that the bolt was left in the generator after routine maintenance last year and that it "did not get there by accident."

(649.5766) Laka Foundation - Last August in his statement to parliament Alec Erwin denied that he deliberately alleged sabotage to be the cause of the incident in announcements on the eve of the March 1 local government elections. Considering the whole series of incidents at the Koeberg Power Station a human failure is indeed the most likely option. Investigators of the National Energy Regulator of South Africa (NERSA) concludes about other incidents in the same time period among others: "The major events that were investigated at the Koeberg NPS clearly indicate deficiencies in the configuration management systems and general ill-discipline."

Earthlife Africa Cape Town is unsatisfied with Alec Erwin's announcement of the findings of investigations into the "bolt in the generator incident" at Koeberg. "Erwin was at pains to remind the public that he did not allege sabotage to be the cause of the incident in announcements on the eve of the March 1 local government elections," it is stated in their August 17 press release. Also stressed by Erwin and other members of parliament was the finding that the problem was located outside of the nuclear part of the power station. Ultimately and in Earthlife Africa's view, neither of these two serve as reassurance about the safety of operations at Koeberg power station. Sabotage or not, the bolt was found where it should not have been and where it did significant damage resulting in a series of blackouts which cost the Western Cape millions of rands and caused environmental damage. As to the location of the bolt; if safety and operating procedures can become so perverted as to allow such a failure (not

once but many times as is indicated by NERSA recent reports into other failures by Eskom), what are the assurances that similar failures cannot take place within the nuclear section of the station? The investigation is unable to conclude further than that the incident was not engineered by any organized group and is unable to determine whether it was a deliberate act by any member of staff at Koeberg. It is ascribed to human error.



And that is exactly the point. In any system the human element is inevitably the unknown variable. The risks when one is dealing with nuclear energy just happen to be much more significant than most- a leak of radioactive material, or worse.

NERSA investigated six major incidents that took place at Unit 2 from November 2005 to March 2006, except the "bolt in the generator" incident in Unit 1, which was subjected to a survey lead by the Corporate Technical Audit Department of Eskom.

On November 11, the switching operations that were conducted in the Koeberg transmission yard resulted in the tripping of several transmission lines and the Koeberg generator Unit 2. NERSA finds that there was negligence on the part of the responsible personnel in that they did not follow the

procedures and instructions as detailed in the Operating Regulations for High Voltage Systems with regards to the documentation of operating instructions and appropriate procedure with regards to risk assessment and analysis. The generator protection systems operated incorrectly, which resulted in the unnecessary loss of load for unnecessarily long durations.

The second event, the malfunctioning of the protection system, on November 12, was caused by the incorrect configuration of the current transformers that was not detected during commissioning.

On the November 16, two transmission lines tripped due to a fire under the line and resulted in the tripping of the Koeberg Unit 2, caused by the

incorrect configuration of the so-called Rapid Power Loss Protection relay. The tripping of the unit, the authors note, amounts to a breach of the license condition, in that the Unit 2 was not capable of islanding and did not separate itself from the network, as required in the Grid Code when the connectivity was lost.

Further they conclude that the corrective measures that were recommended in 2002 that would have prevented this occurrence were not implemented.

On November 23, a controlled shutdown of Unit 2 was initiated due to the out of specification chemical concentration in the safety injection accumulator. Direct cause was the failure to notify the authorities that the adverse boron concentration trend went below the Chemistry specific Target value. The investigative team states the required actions as detailed in the job description

of the responsible person(s) for chemical conditioning were not done. Also the boric acid concentration was allowed to go below the safety specifications and the responsible person(s) failed to notify the supervisor(s) of the abnormality. In addition they note that the operating risk assessment at Koeberg is not adequate.

On February 18, the Kendal power station Unit 6 tripped causing a severe frequency drop and a subsequent under-frequency incident that resulted in the tripping of the Koeberg Unit 2. According to the investigators there was negligence on the part of ESKOM. The coating of and washing the insulators was not undertaken in time. Only after the event did Eskom wash the insulators, in spite of the warnings sent on 6 January 2006. Also the license conditions were breached again, because Unit 2 was unable to remain on load within the frequency limits as required in the Grid Code.

Finally on February 28, Unit 2 tripped again. This time the direct cause was the flashover of an insulator at the Bacchus-Droerivier line caused by heavy mist. The insulator was broken as a result of the flashover thus causing

the line to fall to the ground. Again there was negligence on the part of ESKOM, in that the washing of insulators was not undertaken in time to prevent the faults. The maintenance procedures and policies for the transmission lines are not adequate. Though the deficiency in the design and specifications of the insulators is known, there were no clear mitigation measures taken.

In their summarized findings NERSA notes: "The events indicate trends that are a cause for concern. [...] The lack of documentation and/or management of the system configuration resulted in major interruptions and contributed negatively to the duration of the interruptions on 11, 12, 16 November 2005 as well as the 19 and 28 February 2006 incidents. The complete disregard for reporting of abnormal incidents and adherence to administrative controls coupled with intention to not perform dedicated functions resulted in an unnecessary shut-down of the plant and unnecessary loss of load."

On December 25, 2005, five days after a refuelling outage, Unit 1 tripped from 810 MW due to generator stator earth fault protection. The event was indirectly caused by a bolt left behind in the generator. The bolt was part of the

outer end winding cover of the generator. The investigating team of the Corporate Technical Audit Department of Eskom concludes this was due to inadequate Koeberg procedures detailing Clean Conditions requirements and inadequate oversight, by both client and contractor, to ensure that Clean Condition requirements were met.

In his statement to the South African parliament Alec Erwin assures that the previously used procedures, including training for personnel, have been amended for all future operations.

#### Sources:

National Energy Regulator of South Africa (NERSA), 2006: "Investigation into the electricity outages in the Western Cape for the period November 2005 to March 2006" / Rodseth, K.L. et al. "Executive Report Major Incident Investigation Koeberg Power Station Generator 1 Stator Earth Fault of 25 December 2005". Corporate Division, Corporate Technical Audit Department, Eskom / Statement to Parliament on the damaged Koeberg Unit in December 2005, Minister Alec Erwin, August 17 2006 / + Press release Earthlife Africa Cape Town, August 17 2006

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# DECISION FOR BUILDER BULGARIAN NEW NPP BELENE UPCOMING?

## NGOs inform banks about risks - several banks deny interest

**The latest delay in the choice of builder for the Bulgarian Belene nuclear power plant late July, was argued with what is the Achilles heel of new nuclear: finances and building times. Bulgarian Economy and Energy Minister Rumen Ovcharov stated that the bids from the two competing consortia Atomstroyexport and Škoda Alliance were too expensive and building times were too long. He criticised that re-use of structures and equipment already delivered for Belene in the late 1980s did not lead to lower prices.**

**(649. ) WISE Czech Republic** - In the mean time, a coalition of NGOs campaigns banks from which the Bulgarian Government has claimed support for Belene over the last months. The NGOs inform the banks of risks attached to the Belene nuclear power plant which is to be situated in a seismic active area where on 14 km distance in 1977 200 died in an earthquake. The group including the

Bulgarian coalition BeleNE! (NO! to Belene), German watchdog Urgewald, Bankwatch, Greenpeace, Campagna per la riforma della Banca Mondiale, WISE/NIRS and Global-2000, also point out that the two bidding consortia are renowned for their budget and time-line overdraws. Škoda Alliance advertises its experience with the Temelín nuclear power plant, infamous for its extended building time (15 years instead of 5),

high costs (3,9 Billion Euro instead of the planned 1 Billion) and steady technical glitches as well as highly safety sensitive construction and design problems. Atomstroyexport refers to its present experience in India and China where also building times are overdrawn.

Bayerische Landesbank and the Belgian KBC Group owned Czech bank CSOB,



both mentioned in the Bulgarian press as supportive, in letters to the NGOs flatly deny any interest in the project. The Czech Komerční Banka, owned by the Societé Generale Group from France, denies its involvement in spite of being mentioned as part of the Škoda Alliance bid, and states it only would provide finances if the project would fulfil high standards. German Commerzbank was quite explicit in how these standards should look like: the highest global standards in safety, and that according to Commerzbank CEO Klaus-Peter Moeller during the bank's AGM explicitly excluded a nuclear power station built in a seismic active area and with a manipulated Environmental Impact Assessment - this according Greenpeace and WISE/NIRS's nuclear

consultant for Central Europe Jan Haverkamp explicitly excludes Belene. CitiGroup from the USA, mentioned as financial leader in the Škoda Alliance, and UniCredit Group, involved over HVB in Germany in the Atomstroyexport bid and over the Czech ivnostenská Banka in the Škoda Alliance, state that they will be very critical during the "due diligence" procedure and will adhere to the Equator Principles according to the rules for a category A investment. Haverkamp: "The manipulations and the low quality of the Environmental Impact Assessment should in itself already be sufficient to dismiss the project under the Equator Principles." Also Deutsche Bank stated it will be careful in its risk assessment of the project. The NGOs are currently increasing their pressure on CitiGroup, UniCredit Group and

Deutsche Bank.

That both consortia have come with adapted bids does not impress Petko Kovachev from the BeleNE! coalition and Bankwatch: "It is easy to state shorter building times and lower prices during the bidding process and then increase both later again. That is how both consortia have always worked." A decision in the tender is now expected halfway September. Negotiations for the final contract should finish around the end of the year with building starting early 2007.

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## IN BRIEF

**Groups file challenge in court in attempt to delay Flamanville-3.** On August 22, Sortir du Nucleaire and Crilan have filed a legal challenge to the legitimacy of a construction permit issued to Electricite de France for site work in preparation for construction of a 1,600-MW EPR at Flamanville-3. The groups are seeking to delay the project until upcoming elections in hopes that the left and Greens will return to power and scuttle the project.

Stephane Lhomme, spokesman for Sortir du Nucleaire, said the purpose of the court challenge is to delay the start of work on the planned nuclear unit as long as possible, so as to prevent significant progress on the construction before national elections scheduled for next spring. "It's obvious that EDF is running against time" on the Flamanville-3 project "because they're afraid of the elections".

The groups argue that the construction permit issued August 4 by the prefect of the Manche departement (county) violates France's coastal protection act and urban development code because, in particular, the construction work is not contiguous to a village or other built-up area. The permit at issue covers civil construction work on the foundations of the future reactor and excavation of tunnels for cooling water intake and discharge channels. It does not cover the 500-meter-long discharge channel itself, according to the document filed with the Caen administrative court.

**Nucleonics Week 34, August 24, 2006**

**Austrian court against Czech nuclear plant.** Can an Austrian court rule on the damage coming from a Czech nuclear power plant? Austrians say yes, Czechs say no - of course. On August 24, the Austrian Supreme Court ruled on a legal dispute over the jurisdiction of the Austrian Land Court in Linz in the legal complaint by Upper Austria against the Czech national power company CEZ that runs the nuclear power plant Temelin. The Supreme Court says that the Austrian Land Court can legally decide on the matter.

The implementation of the verdict would be "ensured by legal links within the EU", according to Radko Pavlovec, Austrian commissioner for nuclear installations affairs.

Unfortunately for the Austrians, the European Court of Justice (ECJ) in Luxembourg decided in May that according to the relevant European legislation, the verdict cannot be binding on the Czech Republic - despite the fact that the Czech Republic is part of the EU since May 2004.

According to Upper Austria, the Temelin nuclear power plant (60 km from the Austrian border) contaminated properties in Upper Austria with radioactivity. The damage caused to the plots in Austria or possible lost profits since the plots could not be used for a long time, can be the only subject matter of court proceedings. Activists in Austria, Bavaria as well as the Czech Republic say the plant is not safe because it combines Soviet design and western fuel and safety technology. Czech authorities think differently.

The Austrian Land Court is to deal with the case this autumn.

**CTK - Česká tisková kancelár (Czech News Agency) www.ctk.cz, 24 August 2006**

**Australia: Operating licence for OPAL reactor.** The A\$330 million (around US\$253 million) Open Pool Australian Light-water (OPAL) reactor to replace the existing 48-year-old Lucas Heights reactor on the same site, is one step closer to becoming fully operational. In July, ARPANSA (Australian Radiation Protection and Nuclear Safety Agency) granted the Australian Nuclear Science and Technology Organisation (ANSTO) an operating licence for the reactor at a Sydney suburb. Greenpeace criticised the approval that came just a month after four accidents occurred in one week at the existing Lucas Heights reactor. These included the escape of gases following a pipe rupture on June 8, which disrupted the production of isotopes used in medical

scans, and three workers being exposed to radioactive material in separate accidents. Local residents fear existing emergency plans for the site are inadequate and have criticised the lack of independent assessment of OPAL. "It is like having Dracula in charge of the blood bank," People Against a Nuclear Reactor (PANR) spokeswoman Genevieve Kelly said.

**Sydney Morning Herald, July 14, 2006**

**Russia decommissioning nuclear submarines on schedule.** Russia announced that, as of the second quarter of 2006, it has scrapped 137 out of 197 decommissioned submarines under an international program. The disposal program costs an overall US\$2 billion, with Russia having allocated US\$850 million as of 2005. Moscow signed cooperation agreements on the disposal of decommissioned nuclear submarines with the United States, Britain, Canada, Japan, Italy and Norway.

**RIA Novosti, 12 July 2006**

**First trial over Libya's nuclear bomb collapses.** The international effort to restrict nuclear proliferation suffered a major setback when the first criminal trial of an alleged top figure collapsed. A German judge in Mannheim threw out the prosecution case against Gotthard Lerch. The engineer had been charged for allegedly trafficking components for centrifuges for enriching uranium to Libya. According to state prosecutor Peter Lintz he was among Abdul Qadeer Khan's four main associates. Khan, named as the 'father of the Pakistani bomb', was exposed in 2003-4 as the supplier of nuclear technology, bomb blueprints and scientific expertise to Libya. Lerch faced up to 15 years in prison if found guilty. Judge Peter Seidling said there was a danger of Mr Lerch not receiving a fair trial as the prosecution had withheld evidence.

**Guardian (UK), 26 July 2006**

**Illegal uranium mining in Congo.** The Shinkolobwe mine, which provided the fission material for the US atomic bombs dropped on Japan in 1945, is operating illegal. In 2004 the uranium mine in mineral-rich southwestern Congo province Katanga was ordered shut down by UN investigators who found it unsafe to operate. Though the concerned authorities assured the UN experts that the mine is secured and that no artisan mining is taking place, the experts found seven villages within a few miles of the mine. The inhabitants can easily enter the mine and encounters no barriers or even simple warnings signs.

**Planet Ark, 24 July 2006**

**Yucca Nuke dump.** Meanwhile 19 years behind schedule, the US Energy Department's latest plan foresees the nuclear waste dump in Nevada Desert would begin storing spent nuclear fuel in 2017. The project to store about 120,000 metric tons of nuclear waste in Yucca Mountain has been plagued by scientific foul-ups and political stonewalling.

**Planet Ark , 19 July 2006**

**HEU returns to Russia from Poland.** As part of the Global Threat Reduction Initiative Russia removed 40 kg unused high enriched uranium from the Maria research reactor at Otwock-Swierk in Poland. The reactor near Warsaw is scheduled to be converted to low-enriched uranium fuel. The joint Russian, Polish and U.S. operation, was completed August 9. The U.S Department of Energy paid for it, but did not disclose the costs. The HEU "up to 80%" was transported to the Dimitrovgrad site where it will be downblended to low-enriched uranium.

**Nuclear News Flashes, 10 August 2006**

**IAEA report on illicit trafficking.** According to a IAEA report there were 103 confirmed incidents of illicit trafficking and other unauthorized activities involving nuclear and other radioactive materials in 2005. Nuclear materials were involved in 18 of these incidents, other radioactive materials such as sources in 76, both nuclear and other radioactive materials in two, and radioactively contaminated materials in seven, according to the agency's Illicit Trafficking Database. Two of the reported cases involved gram or sub-gram quantities of high enriched uranium, the IAEA said. The report is available at: [www.iaea.org/NewsCenter/News/2006/traffickingstats2005.html](http://www.iaea.org/NewsCenter/News/2006/traffickingstats2005.html).

**Nuclear News Flashes, 22 August 2006**

**Crate with assault weapons unattended in nuclear reactor.** The American Project On Government Oversight (POGO) discovered a severe security lapse that occurred at the Tennessee Valley Authority's Sequoyah Nuclear Power Plant on August 15. The independent non-profit organisation that investigates and exposes corruption and other misconduct at the level of the federal government was informed that a crate with 30 M-4 assault rifles was allowed to pass into the protected area of the nuclear power plant without adequate inspection. The crate was left unattended for two days and was then opened by TVA employees who did not have authority to handle weapons. The rifles had been delivered by a truck that entered the plant through the vehicle entrance into the Protected Area.

According to a TVA spokesperson "the box was never outside of TVA control". Not a very assuring statement by the way... TVA has promised to make improvements in the protocol for incoming packages.

**POGO press release August 15, 2006 at <http://www.pogo.org> / Nuclear News Flashes, Platts, August 25, 2006**

**Germany: large majority of population support continuation of phase-out.** The large majority of the German population are in favour of continuing the nuclear phase-out, or even accelerating it. Two weeks after the incident at the Swedish nuclear power plant Forsmark, a survey was carried out on behalf of the Federal Environment Ministry regarding opinions on the safety of nuclear power plants and the phase-out of nuclear power.

73% Of Germans consider the risk of an accident at nuclear power plants to be too high. 18% Of all Germans consider the threat of a major nuclear disaster such as in Chernobyl 20 years ago to be just as great now as it was then. 53% Believe that nuclear power plants are now safer worldwide but nevertheless personally consider the risk of an accident to be too high. Only 2% believe that nuclear power plants are now safe and that there is no danger of an accident. 26% Are of the opinion that the risk of an accident has decreased worldwide over the past 20 years at least to such a degree that the remaining risk can be accepted. Under 30-year olds - in other words those that do not remember the Chernobyl disaster - state this somewhat more often than older people.

62% Of Germans are of the opinion that the pace of the nuclear phase-out should be maintained or accelerated. This view was expressed across all age groups; only 55% stated this in the 60+ age group.

15% Of Germans are of the opinion that the pace of the nuclear phase-out should be slowed down. A further 18% are in principle against a phase-out. The majority of the population (51%) consider nuclear power to be a large threat or a very large threat to themselves and their families. 33% of all Germans stated that nuclear power plants, possible attacks on nuclear power plants, nuclear shipments and radioactive wastes represent a large threat to themselves and their families; a further 18% consider these to represent a very large threat (40% see a minor threat, 8% no threat whatsoever). Across all age groups the majority see a large threat or very large threat to themselves and their families; in the age group 18- to 29-year olds only, 44% consider the threat to be very large or large.

**Press release BMU (German Federal Environmental Ministry) August 18, 2006, [www.bmu.de](http://www.bmu.de)**

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The Nuclear Information & Resource Service was founded in 1978 and is based in Washington, DC. The World Information Service on Energy was set up the same year and is housed 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.

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