

NUCLEAR MONITOR

A Publication of World Information Service on Energy (WISE) and the Nuclear Information & Resource Service (NIRS), incorporating the former WISE News Communiqué

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EARTHQUAKE ZONE: JAPAN ESCAPES NUCLEAR DISASTER

It might seem obvious that building nuclear reactors in an earthquake zone is a ridiculous idea but here in shaky Japan, there are 52 of them (soon to be 53). Niigata Prefecture was hit during the recent spate of tremblers and while buildings came down and the lights went out in Kashiwazaki City, the local nuclear power plant (NPP) continued operation.

(618.5648) CNIC - Kashiwazaki-Kariwa NPP stood out like a lighthouse in a sea of darkness, a beacon of hope proving that man is master of the elements, that technology can conquer nature once again. Not that any of the electricity was used in Kashiwazaki itself, no, that precious commodity was sent off to the capital (1).

Tokyo. At this stage, there is no clear picture of what impact the quakes may have had on the NPP but there are reports of a few hundred liters of coolant overflowing from spent fuel storage pools. Of course, if this did happen, the authorities would surely have us believe that not a drop would have been released into the environment.

It must have been difficult in the early days of Japan's nuclearisation to convince a skeptical public about the safety of nuclear energy. The "visionaries" in the government and in

industry thought up a very clever scheme to help people understand that the nuclear reactors they proposed to build would not fall over. This scheme had three basic aspects. The first was to claim that scientists knew where earthquakes would and would not occur. The second was to claim that these same scientists could predict how powerful the strongest earthquake would be in a given place. The third aspect of this scheme was to play on people's belief (common at the time, though few subscribe to it these days) in technology.

Ever since Homo sapiens first strode out of Africa with just a club and a few stone tools to hand, we have been consumed with "progress". Our manifest destiny was to conquer nature and technology was the means by which we would fulfill that destiny. Such was the popular belief at the time, so when these visionaries told people that the nuclear power plants they would build could withstand the

most powerful earthquake possible, people swallowed it.

Anti-nuclear protestor, Sébastien Briat killed

The WISE/NIRS Nuclear Monitor wishes to offer its sincerest condolences to the family and friends of 21-year-old French activist, Sébastien Briat, who was killed while protesting against a rail transport of radioactive waste near Avignon in eastern France on 7 November.

Protestors had chained themselves to the railway track in an attempt to disrupt the transportation of 12 Castor caskets of highly radioactive waste on its way back to Germany after being reprocessed at the La Hague facility in Normandy, northern France.

Although this form of protest is well established and has been practiced by anti-nuclear protestors for many years, on this occasion, what should have been a symbolic action, ended in a tragic loss of life.

Briat, a student, was buried on Wednesday, 10 November in Bar-le-Duc, Lorraine with vigils held in his honor at French railway stations.

Condolences can be sent to the family care of Réseau Sortir du Nucléaire, 9 rue Dumenge, F-69317 Lyon Cedex 04, by fax to +33 4 72077004 or by email to rezo@club-internet.fr

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STRONG QUAKE SHUTS DOWN NUCLEAR REACTOR IN CENTRAL JAPAN.

Another strong earthquake has struck the region of central Japan already hit by a tremor in October, shutting down a nuclear reactor. The quake measuring 5.2 on the Richter scale took place 20 kilometres (12 miles) underground in Niigata prefecture, around 200 kilometres (125 miles) northwest of Tokyo. A 6.8 magnitude quake hit the area on 23 October and was followed by hundreds of aftershocks. TEPCO said the number 7 reactor at the Kashiwazaki-Kariwa nuclear power plant automatically shut down as it was hit by the quake

on 4 November. The reactor remained shut for several hours after the tremor. Five other reactors at the plant continued operations. The mayor of Kashiwazaki asked TEPCO to enhance safety controls at its Kashiwazaki-Kariwa nuclear plant and complained that no one was at the other end of a telephone line linking the Kashiwazaki municipal government with the plant when the quake shook the prefecture.

Channel News Asia, 4 November 2004; Japan Today, 4 November 2004; Kyodo News, 4 November 2004

"Earthquake-resistant" design regulations

NPP buildings and equipment are categorized, on the basis of the potential damage from a release of radiation into the environment, into four levels of importance. Until July 1981 there were only three classes: Class 'A' being most important; Class 'B' for buildings and equipment with less safety significance than Class 'A'; and Class 'C' for buildings and equipment with the same safety significance as general industrial facilities.

Class 'A' buildings and equipment must be able to withstand the strongest predicted earthquake, known as the 'design-basis strongest earthquake'. The magnitude of this earthquake is assessed on the basis of past earthquakes and the likely effect of active faults. A higher classification, Class 'As', was introduced in July 1981 and includes buildings and equipment

in Class 'A' that are deemed to be especially important. These buildings and equipment must be able to withstand what is called the 'design-basis upper limit earthquake'.

You could be forgiven for wondering what the difference is between the 'strongest earthquake' and the 'upper limit earthquake' but basically the 'upper limit earthquake' is envisaged as being even bigger than the 'strongest earthquake'. That would have to make it a real whopper one might think, but not necessarily. In cases where no active fault has been discovered in the vicinity, it is considered to be a magnitude 6.5 earthquake directly beneath the NPP's active fault.

Astute readers might have noticed that reactors built before July 1981 were not designed to cope with the 'upper limit earthquake'. Fortunately, the new rules specifically state that it is not necessary to redesign the old reactors. Actually, in several cases the original calculations for both 'strongest earthquake' and 'upper limit earthquake' were found to be too low and subsequent reactors were built to more stringent design standards. But none is designed to withstand an earthquake of the scale of the one that hit Kobe in 1995. The most severe earthquake considered is for Hamaoka-3, 4&5, built directly above a major plate boundary (2). These are designed to withstand an earthquake of 600 gals (3) at bedrock level. The Kobe earthquake was 833 gals.

For the record, the measuring device on the Kashiwazaki-Kariwa-5 reactor recorded 54 gals at bedrock. Measurements were recorded in the order of 1,700 gals on the surface near the epicenter, but the Kashiwazaki-Kariwa NPP is about 30 kilometers away from there. Also the shaking is generally less at bedrock level. Power companies make much of this, pointing out that the foundations of their power plants rest on the bedrock.

Almost all of Japan's NPPs are in, or very close to areas which are officially designated as requiring specific monitoring for earthquakes (a high chance of an earthquake of magnitude 7 or greater.). Also one should not forget nuclear facilities other than NPPs: for example, the complex at Rokkasho, including, or soon to include uranium enrichment, spent fuel storage, reprocessing and MOX fuel fabrication.

But Rokkasho was very conveniently excluded from the list of areas requiring special earthquake monitoring. It was on the original draft list, but at the time it was thought to be too remote and irrelevant, even though the risk of an earthquake was no less than other areas. Well it has become more relevant since it was chosen to become the center of the nuclear fuel cycle.

Building and equipment classification

As one might expect, the reactor containment vessel and the spent fuel pit are in Class 'As'. Surprisingly though, the turbine and the turbine building of Pressurized Water Reactors, made famous by the recent Mihama-3 accident, are in Class 'C'. The Nuclear Safety and Industrial Agency has admitted that the secondary system (i.e. the turbine side) really should be taken seriously in future, so it will be interesting to see whether the impending revision of the current earthquake guidelines reflects this new awareness. There are no indications that it will though. It is more likely that Mihama-3 will be kept strictly separate from the issue of earthquakes. If included, authorities might also be forced to address the problem of aging

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The next issue (619) will be mailed out on 3 December 2004.

25 YEARS AGO

What happened 25 years ago? We go back to news from our 1979 WISE Bulletin, comparing anti-nuclear news then and now.

Then

In issue 6 of *WISE Bulletin* we covered the proposal for a referendum in Denmark: "Denmark will probably put the nuclear issue to the test of a population vote. The Danish government is about to present an atomic law to parliament. The law will contain the provision that the question surrounding waste disposal and reactor safety has been 'satisfactorily' resolved". (*WISE Bulletin* 6, October 1979)

Now

In the end, no referendum took place. Five nuclear reactors were planned in 1976 but never materialized. The strength of the anti-nuclear movement is believed to be responsible for this. Opinion polls showed that 80% of the public was also opposed. (*WISE News Communiqué*, 16 October 1998)

Danish electricity utilities studied the suitability of six salt domes for nuclear waste disposal in 1979-1980. Five salt domes appeared to be unsuitable after first test drillings and the sixth dome was dismissed after negative comments from the Danish Geological Authority. The Danish parliament decided in 1985 not to build any nuclear power plants. (*Kernafval in zee of zout? Nee fout!* H. Damveld et al, 1994).

Anti-nuclear groups in Denmark have since been active against nuclear reactors in neighboring Sweden, especially the Barsebäck reactor, which is very close to the Danish capital Copenhagen. (*WISE/NIRS Nuclear Monitor* 617, 22 October 2004)

The well-known Smiling Sun anti-nuclear symbol was designed in Denmark in April 1975, by a member of the Aarhus group of OOA, the Danish "Organization for Information on Atomic Energy" (dissolved in 2000). It was a winner from the start, with badges, stickers, posters, T-shirts selling faster than anyone could have predicted. A small slice of the income from sale was used to serve the movement by helping to finance WISE. OOA was determined not to let the Smiling Sun be kidnapped, either by party political groups, or by private business so it was registered as a trade mark in Denmark and many other countries. WISE still takes care that the logo is not misused for commercial benefits. Smiling sun badges and stickers are still available in several languages via the WISE website, www.antenna.nl/wise.

reactors, which really wouldn't do. In as much as Japan's reactors were designed to be resistant to earthquakes (dubious enough in itself), those designs only applied to new reactors. There is very little insight into the ability of old, poorly maintained reactors, with pipes below the regulation thickness, to withstand earthquakes.

The "visionaries" understated the magnitude of the design basis earthquakes, were wayward in their classifications, overly optimistic about the durability of the reactors and maybe even missed a few active faults and earthquake zones here and there, but in truth, no reactors have fallen over, no radiation has been released into the environment as a result of an earthquake, so why all the fuss? The fuss is caused by the lack of any convincing evidence to demonstrate that no earthquake-induced nuclear catastrophe will occur.

Local fears

So finally, what of the people in Kashiwazaki City and Kariwa Village? They have suffered through a terrible

ordeal, albeit less awful than that of towns nearer the epicenter. Had the epicenter had been underneath the NPP and a nuclear disaster occurred, the emergency systems would have failed totally.

People were sleeping outside, in cars, in tents etc to escape collapsed and collapsing buildings, train services and roads were also in chaos. How would they have escaped if a major evacuation had been necessary? There are emergency procedures in place in regions hosting nuclear facilities, inadequate though they may be, but the logic of a nuclear evacuation stands in total contradiction with the logic of an earthquake evacuation.

Realizing this, some people appealed to Tokyo Electric Power Company (TEPCO) to shut down the reactors until things returned to normal. But TEPCO management, due to its unshakable belief in its own technology, or else through sheer bloody-mindedness, kept the reactors operating. Despite this, no news of the situation was reported in the media. It is doubt-

ful if many in Tokyo were even aware that the power that supplied their television sets, came from the region where the disaster was unfolding.

Notes:

1. The Kashiwazaki-Kariwa nuclear power plant belongs to Tokyo Electric Power Company, although Niigata Prefecture is supplied by Tohoku Electric Power Company.
2. The Hamaoka NPP is right over the boundary of the Philippine and North American Plates. In fact, it is sandwiched between four plates – the two just mentioned, plus the Pacific and Eurasian Plates. Hamaoka-5 is due to commence commercial operations in January 2005.
3. Gal is a measure of acceleration.
 $1 \text{ gal} = 0.01 \text{ m/s}^2$

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TIME TO STOP KASHIWAZAKI-KARIWA NPP

The Japanese Meteorological Agency issued warning on possible strong aftershocks following the earthquake on 23 October (1). Despite this and demands from citizens and workers to stop operating reactors at Kashiwazaki-Kariwa NPP while the risk of further tremors existed, Tokyo Electric Power Company (TEPCO), the Japanese government and the local municipalities of Niigata Prefecture and Kashiwazaki City failed to take any action. Had another, much bigger shock occurred, an unprecedented disaster could have been triggered.

If the tremors had caused any serious damage at the NPP, it unlikely that the prevention program for the nuclear accidents worked as designed, because of the destruction of infrastructure, such as road and railway, over a wide area.

It was reported that whistle blowers from within the NPP claimed that cracking had occurred in some pipes, and that emergency equipment was said to be unreliable. (2) Geological experts stated that apart from the danger of strong aftershocks, it was possible that a separate earthquake could occur near the reactors.

Citizens' Network of Kashiwazaki-Kariwa discovered that the government and local municipalities had no plans in place in case of a nuclear disaster. This is one reason why the group wants operations at the plant's reactors to stop until the authorities announce the cessation of aftershocks.

The question of why any damage around Kashiwazaki, and Kariwa was excluded from media reports remains despite reports, from those living in

the surrounding area, that damage had occurred. In fact, the water supply was cut and many people had to be evacuated in Kariwa Village where a large number of workers from the NPP live. Even if the NPP stopped immediately, the nuclear fuel would still retain its heat for a considerable duration. In case of the coolant loss, the nuclear fuel would melt down, causing a catastrophe. The consequences of such a nuclear accident would last for an immeasurable time.

(1) www.jma.go.jp/JMA_HP/jma/niigata.html (in Japanese)

(2) www.kisnet.or.jp/net/mainpage.htm

Contact: Citizens' Network of Kashiwazaki-Kariwa at net0257328818@hotmail.com or visit www.kisnet.or.jp/net/

WEAKER RADIATION STANDARDS; U.S. PERSPECTIVES

The International Commission on Radiological Protection (ICRP), a private agency comprised of nuclear advocates, is updating its recommendations for allowable exposures to ionizing radiation.

(618.5649) NIRS - ICRP's "recommendations" routinely form the basis of federal and international regulations. The draft ICRP 2005 is available for public comment on its website, www.icrp.org/icrp_rec_june.asp. ICRP must be told, before the December deadline, what we, who receive the doses, think!

Deregulating and Not Regulating Nuclear Materials and Practices: the old "BRC" ICRP-2005 recommends NO regulatory control over anything radioactive that gives a low dose or has a low concentration. Both manmade and natural radioactive materials and wastes can be "excluded" from the whole regulatory system if they can be calculated or measured to be less than the ICRP-2005 recommended levels. They can also be "exempted" meaning they are included in the system, subject to regulatory authority, but not regulated. ICRP 2005

refers to the exemption levels developed by Euratom and others. These are the same exempt levels NIRS and four other groups are suing the Department of Transport (DOT) and Nuclear Regulatory Commission (NRC) to reject in US transport regulations.

ICRP-2005 reverts back to the long-discredited concept of a "safe threshold" and adopts a level of one millirem (mrem, 10 microSieverts uSv or 0.01 milliSieverts mSv) per year. ICRP concludes that below 1 mrem/yr (10 uSv/yr), or below specified concentrations (ranging from 0.01 to 10 becquerels per gram; 0.27 to 270 picoCuries per gram), there should be no regulatory control or constraint.

Supposedly low levels of exposure and industry difficulties maintaining control, justifies exclusion from the regulatory system, as if not radioactive. This "exclusion" under ICRP's

recommendations is contrary to the U.S. National Research Council 1990 BEIR-V Report conclusion that regulators should recognize the linear no-threshold relationship of dose to response all the way down to zero dose.

ICRP recommends allowing radioactive materials estimated to give doses above one mrem (10 uSv) annually to be "exempted" from regulations and subject to less than full regulation. This would give a green light to the use of radioactive materials in consumer products. ICRP provides no estimate or limit on the number of exclusions and exemptions. There is no verification or enforcement.

This violates repeated public opposition to deregulating nuclear materials and wastes despite ICRP's claims of intending to involve

"stakeholders." ICRP perpetuates the incorrect assumption that we will accept "trivial" risks from release of previously regulated man-made nuclear material.

We call on ICRP to require that all man-made ("artificial") radioactivity be regulated at all levels...not "excluded" or "exempted" from controls.

Ignoring Radiation Studies Indicating Increased Risks from Low Doses

ICRP ignores studies on radiation damage such as the Bystander Effect (cells in the area but not directly hit by radiation show injury) and Genomic Instability, claiming that they do not know enough to reflect its risk estimates. The CERRIE Committee and its Dissenters charge that ICRP's risk levels underestimate risks by 10 to several hundred fold. (More in future Monitor on these.)

We call on ICRP to incorporate increased risks identified by other scientists and panels in its radiation risk estimates and to adopt the precautionary principle of preventing potentially harmful exposures.

Underestimating Alpha Internal Risks and other risks

In updating exposure standards, ICRP chose to retain a relative biological effectiveness or quality factor (RBE) of only 20 for alpha particles despite estimates by some researchers that they do hundreds of times more biological damage than gamma and X-rays.

We call on ICRP to incorporate the increased risks from alpha particles and other internal emitters.

Reduce Worker Exposure

Although the US (which allows workers 5 rems or 50 mSv/year) has not even adopted ICRP 60 (1990)'s more protective worker exposure limits (2 rems or 20 mSv per year), *we join the European safe energy advocates and UK National Radiological Protection Board in their calls for even more protective worker dose limits.*

Replace "Standard Man" with the Protection of the Most Vulnerable

ICRP claims that its primary aim is to provide "appropriate radiation

protection" for Reference Man ("Standard Man") "without unduly limiting the beneficial actions giving rise to radiation exposure." This amounts to inadequate protection for most of us, and only then if it does not interfere with nuclear industry profit.

Environmental and Non-Human Species

The ICRP has formed a new committee (#5) regarding radiological protection of non-human species. It is deriving a set of "Reference Animals and Plants" (e.g., worms, bees, rats, ducks, crabs, salmonid and flat fish, brown seaweed, pine trees, and grasses). These will be inadequate like "standard man" has been. ICRP wants to develop dosimetric models and environmental geometries for various species, in order to assess background dose rates, and effects on early mortality, morbidity, reproduction, and DNA damage, yet we see them repeating the same mistaken assumptions simply because they are easy or familiar. NIRS nominated two knowledgeable PhDs to Committee #5 but ICRP has completely ignored the nominations after publicly announcing that they would welcome varying perspectives. *Call on ICRP to accept Dr. Judith Johnsrud and Dr. Dennis Nelson to ICRP Committee #5 to reflect some balance in expertise and perspective.*

Segmented Doses Ignore Total Dose a person could receive

ICRP bases its new dose limits on a two-tier system of protection. In 1990, ICRP identified three *classes* of exposure: public, worker, and medical. The ICRP does not limit additive doses when a person is a member of two or more *classes*. This means one can be exposed on the job plus as a medical patient but the doses would not be added together to protect for both *classes* of exposure.

Tier 1 recommends a dose constraint, the dose from a single radiation source (like a nuclear reactor) to an individual member of one of the classes, and a dose limit is the sum of all the doses to an individual in one of the classes. The ICRP says it set this level to protect the most exposed

individual, ergo, NOT the most vulnerable. ICRP regards exceeding this dose constraint as a "failure," but suggests no enforcement. Tier 2, optimization of protection, purports to minimize doses without impeding the progress of the nuclear industry. We call on ICRP to combine and limit the doses from all classes, and to adopt a goal of protection regardless of industry costs.

Conclusions for Commenting to ICRP and national officials

To reiterate some of the bolded suggested comments above, NIRS urges ICRP to:

(a) Discourage and prohibit deregulation of nuclear materials and activities. Reject the notions exclusion and exemption for manmade radioactive materials, and practices (artificial sources of exposure). Reject use of a threshold to deregulate nuclear materials.

(b) Reject any increases in allowable doses to workers or public; instead, lower the permissible doses, recognizing that for some individuals, these doses may STILL not be protective enough. This is to take into account research findings on low-level radiation impacts.

(c) Replace Reference Man or Most Exposed Individual with the most sensitive members of potentially

TERMINOLOGY EXPLAINED

"Sievert" and "millisievert" (mSv) are international units of radiation dose equivalent measurement. U.S. regulators still use the terms, "rem" and "millirem." One sievert equals 100 rem. One mSv equals 100 mrem. One millirem equals 10 microsieverts or 0.01 mSv.

Doses above 400-500 rem (4-5 Sievert) are usually lethal to 50% of an exposed population, but health effects, including cancer, are caused at much lower doses. Every dose, no matter how low, increases health risks.

exposed populations in regulations and supporting calculations.

(d) Expand consideration of radiation impacts to include all deleterious effects, not just fatal cancers and gross genetic effects for the first two generations. Incorporate increased radiation risks from the studies of the bystander effect and genomic instability.

(e) Support the NIRS' nominations to ICRP's new Committee #5 on non-human and environmental exposures, Drs. Judith H Johnsrud and Dennis Nelson from the US.

Comment to ICRP by 5 December 2004 AND contact NRC, EPA, DOE, DOT, physicians, and state and local radiation regulators to insist that

protection be increased not reduced.

This article was the first in a series by NIRS on radiation standards

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EBRD: TIME TO CHANGE YOUR ENERGY POLICY.

In mid October the European Bank for Reconstruction and Development (EBRD) announced that it would review and merge its Energy and Natural Resources Policies, copies of which can be seen at www.ebrd.com.

(618.5650) Antony Froggatt - The EBRD is the only International Financial Institution (IFI) to fund nuclear power. Earlier this year, the Bank awarded a US\$42 million loan to complement an US\$80 million loan from the EU, through the Euratom Loan Facility, for the controversial Khmelnytsky 2 and Rovno 4 (K2R4) nuclear reactors in Ukraine.

This was the first time the EBRD have funded a nuclear power project, however, it had previously attempted to fund the completion of Mochovce in Slovakia and the previous version of the K2R4 project in Ukraine.

Other international and regional financial institutions do not fund nuclear power. Even the World Bank, not renowned for its environmental awareness, has a policy not to fund nuclear power projects directly; similarly the Asian Development Bank has a specific non-nuclear policy.

When the EBRD was founded in 1991, it was the first IFI to have in the Bank's founding charter a requirement to promote in the full range of its activities, environmentally sound and sustainable development. Since then its energy lending has not lived up to this requirement.

In addition to lending for nuclear power, the Bank has failed to create a lending target for renewable energy projects and approved loans for the extensive development of the oil and

gas sectors in Russia and Caspian Region while failing to adequately protect the environment and rights of the local population.

According to the bank's Environmental Policy "the EBRD may also carry out Strategic Environmental Assessments (SEAs) on the likely environmental consequences of proposed sector or country/regional plans or programmes which have the potential to significantly affect the environment".

However, despite numerous proposals from the CEE Bankwatch Network and the recommendation of the Fourth Ministerial Conference "Environment for Europe", held in Aarhus in June 1998 (1), to carry out a Strategic Environmental Assessment, the EBRD refused to conduct an SEA of the new Energy Policy and did not provide any rationale for such a decision.

The EBRD should now reform its energy policy by:

-Altering its energy policy so that it can no longer lend to nuclear power projects.

-Introducing binding targets for loans for renewable energy and accelerating programmes to support the development of the technology in the region. This could significantly aid renewable energy in Central and Eastern Europe and in particular enable the new EU Member States to meet their renewable energy targets.

-Establishing and enforcing clear requirements for projects involving extractive industries.

-Proving its commitment to sustainable development by conducting a Strategic Environmental Assessment of the draft Energy Policy, what should obviously include the evaluation of possible alternative scenarios.

The policy revision will take place in three distinct phases.

-Comments on the existing policies should be sent to the EBRD by 15 December to energypolicyreview@ebrd.com

-Regional workshops on the existing policies will take place in London, Moscow and Sofia before the end of 2004. If you wish to take part in these hearings or would like more details then contact: ngo@ebrd.com

-A revised draft is scheduled for publication in March 2005, which will be followed by a 45-day consultation period. The Bank's Board of Directors, made up of representatives of European and international governments, should then adopt this.

NGOs and citizens are encouraged to contact the EBRD with comments on the existing policies as well as the process of policy consultations and request to be kept informed of the process by emailing ngo@ebrd.com.

For more information contact Yury Urbansky -urbik@bankwatch.org - at CEE Bankwatch Network or visit www.bankwatch.org

Notes:

(1) The Ministers agreed that: "...a

strategic environmental assessment facilitates the systematic analyses of the environmental impacts of proposed policies, plans and programmes and invite countries and international finance institutions to introduce and/or carry out strategic environmental assessments

with the appropriate participation of NGOs and citizens."

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ARGENTINA: WILL ATUCHA II SURVIVE THE TRUTH?

“If we cannot finish Atucha, we have a problem”, was the message from Jose P. Abrata, president of the Argentinean Atomic Energy Agency to parliament last June. Such a comment displays a lack of confidence even among top members of the government. There are many obstacles to the completion of Atucha II: technological obsolescence, changes among institutional partners, lack of funding, chronic underproduction at the Arroyito heavy water plant, and delayed national decisions vis-à-vis radioactive waste.

(618.5651) Dr. Raul A. Montenegro - The construction of Atucha II began in 1981 was facilitated by ENACE (Empresa Nuclear Argentina de Centrales Electricas Sociedad Anonima) following the signing of a 1980 contract between CNEA and Siemens-KWU.

The original 1981 cost projected by Siemens was US\$1,579 million. In 1991-1992, the cost was estimated at US\$3,100 million and by early 1994, the federal government had halted both the building and the financing of Atucha II. Such paralysis still continues to date.

In September 1994, the national government created Nucleoelectrica Argentina S.A. (NASA) to run the three nuclear power plants in Argentina (Embalse, Atucha I and Atucha II). Although 100% state-owned, regulation 1540/1994 opened the possibility of future privatization. In 1997, Siemens dissolved its partnership with CNEA and NASA, and ENACE was disbanded. Due to the lack of interest from local and foreign investors, the privatization of nuclear facilities failed in 1998.

With NASA funds, some small advances were made at Atucha and by the end of 1999, the reactor's pressure vessel was mounted *in situ* at an estimated cost of US\$2,732 million (lower than 1990-1991 figures but higher than Siemens originally projected). Nevertheless, when

including loan subsidies and budget for completion the real cost reaches US\$4 billion (2001).

Following various bureaucratic measures and declarations (2000-2002), CNEA produced a new actualized budget for Atucha II in 2001 with two scenarios considered, closure or completion. Two years later, the Federal Energy Secretariat began negotiations in Germany, vis-à-vis re-starting work on Atucha II (2003).

In 2004, the Planning Ministry adopted the issue after the federal declaration that Atucha II will be completed. Was this decision the result of disturbing figures? Maybe. After all, just the storage of non-installed equipment alone cost US\$5 million per year.

Obstacles and more obstacles

The original Atucha II design involve a PHWR (Pressurized Heavy Water Reactor) of 692 MWe, using natural uranium or slightly enriched uranium as fuel, and heavy water as moderator and coolant. Designed before 1981 (even prior to Chernobyl) parts of the design are now certainly obsolete. After 20 years of delays, partners, designers and technology have changed and Atucha II has become a mixture of technology and (techno) archaeology.

One major obstacle has been the lack of funding. According to CNEA, 28% of the total cost for finishing Atucha II in

2001 was secured: US\$139 million from German loans, and US\$45 million from NASA. US\$502 million, nearly 72% of the total sum remained without financing. Even the actualized total cost of US\$488 million seemed an expensive figure.

There is also a parallel budgetary challenge: the Atucha II general debt, of which the consequences are difficult to predict. CNEA reports that the debt is composed as follows: US\$100 million to Siemens, US\$902 million to German banks, and US\$80 million to different investors. The result is a grand total of US\$1,08 billion.

Whether Atucha II is finally completed or not, the debt remains. Of course, most of this amount has been included in the Club of Paris negotiations. This is an association of central banks from industrialized countries (18 OECD members plus Russia) created in 1956.

Its main goal is to ensure a permanent flow of funds from Third World debtors to industrialized creditors. Nevertheless, the final agreement between the federal government of Argentina and creditors seems unpredictable now.

Atucha II is closely linked with another expensive installation, the Arroyito Heavy Water Plant (PIAP). If Atucha II is not finished, the government cannot maintain Arroyito. With building costs of US\$1,300

million and maintenance costs of US\$4.3 million annually for salaries, and US\$0.5 million per year in electric consumption, PIAP is a large and unsustainable white elephant. CNEA president, José Abrata, said that PIAP produces 25 tones of heavy water per year (10 tones for the INVAP project in Australia, and 15 tones for Embalse NPP), although the limit for economic profitability is 100 tones per year. During his statement to Parliament last June, Abrata said, "there is no sense to light up the plant" for 25 tones "because the minimum is 100 tones". Atucha II cannot be separated from PIAP; if Atucha II is not finished, PIAP must be converted for another industry. For Argentine society (and maybe the Ministry of Economy as well), Atucha II and PIAP are two closely related money pits.

The question of what to do with the waste provides another obstacle. Argentina's law 25018 relates to addressing the problems of radioactive waste (1998) and yet CNEA's activities continue to be expanded both inside and outside Argentina without solutions to the numerous radioactive hotspots. In Cordoba city, the uranium dioxide plant, Dioxitek S.A., maintains 36,000 tones of low-level radioactive waste (uranium tails) in the ground. Such materials have been buried without membranes or isolation.

A loan from the World Bank for the remediation of several uranium mines in Argentina was never approved, and this program, PRAMU, is now an empty page at CNEA's web site (www.cnea.gov.ar). Even the creation of a specific program for isolating deposits of radioactive waste was delayed until 2003.

How can the completion of Atucha II be justified when key decisions on radioactive waste have been permanently delayed? How can the ridiculous amount allocated for the treatment and isolation of radioactive waste in CNEA's budget be justified? Who will pay for the decommissioning of Atucha II, Atucha I and Embalse? There are too many questions and sadly few answers for so serious a matter.

NEVADA SURVEY ON YUCCA

On 5 November, the Nevada State Agency for Nuclear Projects announced the results of a survey on Nevadans' views regarding the proposed dumpsite for high-level radioactive waste targeted at Yucca Mountain.

The survey reported that, if given the chance to vote on the issue, nearly 77% would vote against the dump, up slightly from one year earlier. 73% want the state to continue resisting the dump, and reject negotiating for benefits from the federal government in exchange for ending opposition. A vast majority also expressed concerns about the risks of transport accidents, leaks from the dumpsite, as well as socioeconomic damage to Nevada's gambling and tourism industries from the Yucca Mountain Project. A vast majority of respondents supported ongoing lawsuits and State denial of necessary water rights to the dump project. There was also majority support for blocking other Department of Energy (DOE) activities at the Nevada Test Site (such as "low" level atomic waste dumping) and having State police stop high-level radioactive waste trucks bound for Yucca.

Given such survey results, it is all the more ironic that Nevadans voted on 2 November by 51% to 48% (414,939 to 393,372) in favor of returning Republican George W. Bush to the White House, despite his administration's wholehearted support for opening the Yucca dump, while his opponent

Democrat John Kerry was outspoken against the dump's opening. Former President Bill Clinton, campaigning in Nevada for Kerry just days before, told Nevadans that the presidential election was in fact a referendum on Yucca Mountain.

Democratic Rep. Shelley Berkley said of her leadership in the U.S. House of Representatives against the Yucca dump, "It's becoming increasingly more difficult when the people from the state of Nevada have just handed a mandate to the very person who has vowed to turn the state into a nuclear dump." (1). The silver lining from an otherwise dark election day in the "Silver State" for opponents to the Yucca dump may be the imminent ascension of Nevada's U.S. Senator Harry Reid to the position of Minority Leader in the U.S. Senate. Reid has led the opposition to the Yucca dump in the Senate since 1987. Dump proponents will undoubtedly lobby Congress to overturn last July's U.S. Court of Appeals ruling that Yucca's 10,000-year environmental protections are woefully too short, and Reid's leadership position will help in efforts to derail such efforts. See www.state.nv.us/nucwaste/news2004/pdf/nv0410survey.pdf for full survey results.

(1) Las Vegas Review Journal, 4 November 2004

Contact: Kevin Kamps, kevin@nirs.org, at NIRS

Atucha II is a huge white elephant, closely related to other nuclear white elephants like PIAP and the Nuclear Plan of Argentina. If the president of CNEA cannot show confidence in the completion of Atucha II, then that signal is quite significant. The only way to accelerate the completion of Atucha II is to continue to hide the truth, and CNEA is successful doing just that.

The challenge now is to disseminate the real costs and risks of Atucha II. After 30 years of operation, Atucha II will produce 8,000 m³ of low and intermediate radioactive waste, 4,500 tones of high radioactive waste, plus

air, water and soil pollution with radioisotopes like Cesium 137, Strontium 90 and Iodine 131.

Our citizens in Argentina must either decide to close Atucha II at a cost of US\$20 million, with zero risks, or to finish Atucha II at a cost of US\$488 million, plus PIAP expenses, and face a future of unpredictable danger.

Source and contact:

Dr. Raul A. Montenegro, Biologist, President of FUNAM and Professor of Evolutionary Biology at the National University of Cordoba. Alternative Nobel Prize 2004. Email: montenegro@funam.org.ar

IN BRIEF

Russian inquiry into rumored nuclear disaster. An accident at Balakovo NPP on 4 November caused the shutdown of the reactor between 4-6 November after a 7cm crack was found in a pipe of the primary water circuit. Although it was not a large accident, rumors of a nuclear explosion and large radiation release spread quickly across the surrounding region. Residents rushed to buy iodine medicines (taken orally to prevent radiation damage to body's cells) but a few people were poisoned and required hospitalization. Authorities have been quick to blame "Green" activists for provoking hysteria but environmentalists have pointed to the lack of public information when the accident was first reported leading to widespread panic. In an open letter to the head of the Federal Agency for Atomic Power, Ecodefense called for independent inspections (by environmental groups) at Balakovo and other NPPs across Russia and improved communication from the industry. In an official response, the agency said it would be willing to discuss such cooperation with environmental groups.
RIA Novosti, 11 November 2004; Ecodefense by email, 10 November 2004; AFP, 8 November 2004

European Commission reports on decommissioning. On 26 October, the European Commission released a report on decommissioning funding in EU countries. The report was a consequence of the "common rules for the internal market in electricity", adopted in 2003. The European parliament asked for separate funds, managed by independent bodies, but the Commission refused to turn this into law and instead proposed issuing a "recommendation" in 2005 for sufficient resources to be set aside. The present report observes widely varying methods of funding the dismantling of NPPs. Some countries opt for immediate dismantling, which requires huge sums of money while others choose to delay dismantling, which postpones the need for adequate funds. The management of these funds and transparency also varies widely

from country to country. Friends of the Earth Europe called the present report contemptible and accused the Commission of shielding nuclear utilities from market discipline through an ongoing failure to uphold rules on fair competition.
Euractive.com, 1 November 2004; FOE Europe press release, 26 October 2004

Israel re-arrests Vanunu. After already serving 18 years in prison for blowing the whistle on Israel's illicit nuclear program, Mordechai Vanunu was re-arrested on 11 November for allegedly passing classified information to unnamed international parties. The "classified information" was reportedly found during an armed police raid (with around 30 officers) of Vanunu's room at the Saint George Anglican Church where he has been staying since his release from prison. Vanunu is expected to appear in court on 12 November.
The Guardian, 11 November 2004; US Campaign to Free Mordechai Vanunu by email, 11 November 2004

Japan approves MOX-burning reactor. The Ehime prefectural government on 1 November approved a plutonium-thermal project by Shikoku Electric Power Co. to burn mixed-oxide (MOX) fuel at the number 3 pressurized-water reactor in Ikatacho. The town of Ikata has already given the go-ahead and once the formal go-ahead is given by the national government, Shikoku Electric will buy MOX for the project.
The Japan Times, 2 November 2004; The Daily Yomiuri, 2 November 2004

Russian scientist surrenders plutonium. Russian atomic scientist Leonid Grigorov surrendered 8 containers of arms-grade nuclear material he had kept in his garage for 8 years to police on 2 November. The former scientist claimed to have removed the 400 grams of plutonium-238 from a disused Siberian laboratory for safekeeping after the lab was looted following the fall of the Soviet Union in 1991. The scientist said he had tried to

alert former bosses to the danger but had received no response. Although local police are quoted as saying that Grigorov was right to hide the material, he may still face criminal charges.
Reuters, 4 November 2004; BBC News, 2 November 2004

Sweden: Greens try to block cable link to Finland. The Swedish Greens have filed a parliamentary motion to stop a plan to construct a high-voltage undersea cable from Finland to Sweden. According to the Greens, Sweden is helping to develop the fifth Finish reactor by financing the cable project with US\$ 285.7 million. The cable would export electricity from the new reactor to Sweden.
Nucleonics Week, 4 November 2004

France to sell third of Areva. The French government is to carry out a plan to sell one third of nuclear power company, Areva, on the Paris stock exchange early next year. The sale is expected to raise over 3.5 billion Euro (US\$4.51 billion) and will increase the amount of publicly traded Areva shares from 35 to 40%.
New York Times, 11 November 2004

Level 2 incident in Sweden. An incident rated at Level 2 on the INES scale has occurred in Studsvik when iridium-192 contaminated a laboratory via the ventilation system. Inspectors at the Swedish Radiation Protection Authority (SSI) have been investigating since the incident occurred on 20 September. Workers at the laboratory were said to have escaped serious injury.
Platts Nuclear News Flashes, 26 October 2004

Norway: study on cancer link. The government of Norway is preparing a report on radioactive emissions during the 1950s and 1960s from the Kjeller laboratory in an effort to determine whether those who grew up in the area are at higher risk of developing cancer or other health problems. The report

JAPAN IGNORES COMMON SENSE TO CONTINUE ROKKASHO SCHEME

The Atomic Energy Commission (AEC) of Japan has issued a long-term national nuclear policy for Japan after concluding the first-ever assessment of the viability of the nuclear fuel cycle program.

The resulting report declared that Japan would no longer be able to utilize nuclear power as its main power source if the government abandoned current plans to reprocess irradiated (spent) nuclear fuel at the Rokkasho reprocessing facility in Aomori Prefecture. The report also states that the advantages of reprocessing would be negligible if plans to construct a fast-breeder reactor were aborted. Fast-breeders burn plutonium to generate electricity and produce (breed) even more plutonium.

Japanese media reported that AEC also estimated the costs of reprocessing nuclear fuel over a period of 60-years (to 2059) at 42.9 trillion Yen (US\$445 billion) compared to 30-38.6 trillion Yen (US\$311-400 billion) for burying the waste. The report further claims that the burial option would necessitate the closure of all Japan's nuclear plants by 2016. However, Japanese media has suggested that this would only be the case if Aomori Prefecture, host to the Rokkasho plant, were to refuse to take waste from other NPPs (as retaliation) in the event of the reprocessing scheme's cancellation. If this did occur, other NPPs would reach waste storage capacities much quicker, which would thus make continued operations impossible. The costs of

construction at Rokkasho are said to be over 2 trillion Yen (US\$20 billion) and having made such a huge financial investment, power utilities are lobbying hard to ensure there is no reversal of the decision to start operation at the reprocessing plant in 2006. The utilities would seek compensation from the government if plans were halted now.

Despite the relatively cheaper cost of burial, the AEC has, according to the group Citizens' Nuclear Information Center (CNIC), 'agreed' to sticking to the reprocessing option. CNIC reports that the process for coming to agreement basically involved going round the table to listen to all opinions then the chairperson announced that the decision was made, thus rubberstamping government policy. Excellent process.

The AEC's report has been presented to a subcommittee, which is expected to make its final conclusion on the waste disposal issue, to be adopted by the government, by year end.

WISE Japan has initiated a sign-on letter for organizations and individuals who wish to protest against the operation of the reprocessing plant and the upcoming uranium testing. Those interested in reading the letter should contact Satomi Oba at WISE Japan kota-goldencat@kfa.biglobe.ne.jp

www.cnic.jp, 2 November 2004; AFX, 22 October 2004; www.asahi.com 9 October 2004

should be ready by February 2005. The Norwegian NGO Bellona has been demanding a study of the emissions and noted that about 30 residents from the area who have cancer have publicly said they believe radioactive emissions from Kjeller caused their illnesses. Research reactors at Kjeller were used for isotope production and another is still in operation.
Nucleonics Week, 4 November 2004

Swiss Greens slam plans for new nuclear plants. Anti-nuclear groups have criticized plans for a new nuclear power station to replace aging plants in Switzerland. The groups, including WWF Switzerland, the Swiss Energy Foundation, the Greens and the Social Democratic Party, say renewable energy could produce as much power as is currently generated by the three nuclear reactors and dismissed

industry allegations that Switzerland was facing a shortage of power unless electricity output could be increased. The comments came ahead of a debate in the cantonal parliament of Bern about the future of the Mühleberg power plant near the capital, Bern. The Bern energy utility company wants to extend the life span of the nuclear plant.
Neue Zürcher Zeitung, 10 November 2004

Appeal against Hungarian waste to Chelyabinsk. Russian environmental groups and over 5,000 residents of the Russian Chelyabinsk region have urged the newly appointed Hungarian Prime Minister Ferenc Gyurcsany to halt plans to export spent fuel to Chelyabinsk. The fuel is to be transported to the "Mayak" facility. In April, a special protocol was signed by both countries that allows future contracts for spent fuel handling. "Mayak" is known for its bad environmental reputation after radioactive waste was dumped into open lakes and rivers over the past four decades. In 2002, the Russian Supreme Court confirmed that a 1998 transport of spent fuel was illegal. Russian NGO Ecodefense (WISE Russia) demands that such transports never happen again.
Ecodefense press release, 27 October 2004

Uranium found in Russian dump. Security forces in Russia have seized two containers of highly radioactive uranium-238 found by homeless people at a waste dump in Central Russia. A scrap dealer raised the alarm when the containers were offered for sale as scrap metal. Observers have been raising the issue of unsecured nuclear materials from Soviet-era nuclear facilities for some time, fearing that the materials could be used by terrorists.
The Times, 20 October 2004

Russian nuclear industry's math problem. According to a new study obtained by environmental group, Ecodefense, the Russian government's plan to import foreign irradiated

(spent) nuclear fuel failed to include specific costing for the storage of nuclear materials and the utilization of radioactive waste. The "forgotten" amount is nearly US\$34 billion, which when added to the official projected cost, brings the grand total for the scheme to over US\$44 billion. The report on the economics of nuclear waste import asserts that officials failed to include various pertinent costs in the economic assessment. Ecodefense accused the government of wasting taxpayer's money while further damaging and endangering the environment and Russia's economy. **Ecodefense press release, 22 October 2004**

Portugal rejects nuclear power. Portugal's center-right government said on 22 October it had ruled out using nuclear energy to reduce the

nation's high dependency on oil. A government report outlining options for Portugal's energy future, which was analyzed by the cabinet, proposed using nuclear power and reviving a giant dam project in northern Portugal. But both options were unanimously rejected. The country is one of the most oil-dependent members of the European Union along with Spain, Ireland and Greece. **Agence France-Presse, 22 October 2004**

Romanian smuggled machine gun into nuclear plant. Romanian police have arrested a man who smuggled a handmade machine gun into the country's sole nuclear power plant hidden in a bag. The 31-year old man, a locksmith at the 750-megawatt reactor on the river Danube in Cernavoda, told investigators that he was offered about US\$3 to smuggle the bag into the

plant and hide it there. Police have launched an investigation into the incident. **Reuters, 22 October 2004**

Unwanted guest at Indian NPP. The Tarapur nuclear power station and the adjacent Bhabha Atomic Research Centre (BARC) are playing host to a panther that managed to evade traps set by officials. The animal has been seen roaming the number 3 and 4 reactors. Employees at both facilities have refused to work the nightshift; afraid they might become the panther's next meal... **Web.mid-day.com (Mumbai news), 25 October 2004**

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THE NUCLEAR MONITOR

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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