

NUCLEAR MONITOR

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UKRAINIAN NUCLEAR GRAVY TRAIN SET TO CONTINUE

In November 2003, the European Bank for Reconstruction and Development (EBRD) called for expressions of interest in order to undertake another Environmental Impact Assessment for the completion of two reactors in Ukraine, Khmelnytsky 2 and Rivno 4 (K2R4). If undertaken, it will be the third EIA Commission by the international community of the now infamous reactors and yet another lucrative contract for western consultants preparing the project.

(601.5565) Antony Froggatt - Since the European Commission sent its team to Ukraine to assess the viability of completing the two reactors in 1993, approximately 30 million Euro (US\$ 38 million) has been spent preparing the project.

In addition to two, now maybe three, EIAs, Western institutions have paid for five least cost assessments, two financial due diligence studies and at least two safety studies. However, the tax Euros wasted on the consultants will pale into insignificance compared with the actual project, were it ever to be completed. Action is needed now to ensure that it goes no further in the EBRD.

The project has been opposed by a large number of NGOs across Europe who view it as both environmentally damaging and dangerous. However, opposition to the project is not

restricted to civil society. In 1996, the EBRD commissioned its own independent panel to review the economics of the proposal and this panel concluded, "that K2/R4 are not economic. Completing these reactors would not represent the most productive use of US\$ 1billion or more of EBRD/EU funds at this time". (1)

Despite this, the EBRD and European Commission gave provisional approval for their institutions, along with export credit agencies, to co-fund the project in December 2000 with a US\$1.7 billion completion plan for K2R4. The final agreement on the provisional agreement was required within 12 months, however in November 2001, during the week of the final decision, the then Ukrainian Prime Minister sent a letter to the EBRD President requesting that the Bank change its financial conditions. In particular, the Ukrainian

Government did not feel that it could justify the increase in electricity tariffs necessary to fund the project. The Bank did not comply and the project was officially suspended.

Since then, little has been said publicly but behind the scenes ongoing negotiations have been taking place between the EBRD, European Commission and Ukrainian Governments. In December 2003, the Ukrainian Government appointed two State commissions to ensure completion of the two reactors by the summer of 2004, confirming an earlier statement by President Kuchma.

However, one-month prior and somewhat in contradiction, the EBRD had called for expressions of interest to undertake another Environmental Impact Assessment for the completion of the two reactors. The Bank announced that it was considering participating in a 250 million Euro (US\$ 315 million) project to upgrade the K2R4 reactors.

The EIA and possibly subsequent public participation process was expected to start in March 2004 and last approximately 5 months and thus the completion of the reactors is scheduled to occur before the EIA and public participation process ends.

If the EBRD and Euratom are to

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ACTION ALERT

Activists should contact the EBRD as soon as possible to ask that it abandons attempts to re-engage in the K2R4 projects and instead assist the Ukraine with other energy sector projects, in particular energy efficiency measures that are desperately needed.

Emails of protest should be sent to: President Jean Lemierre: LemierreJ@ebrd.com
And CC'd to: Doina Caloianu (NGO liaison): CaloianD@ebrd.com

participate in the project, it is clearly with much lower involvement than in the previous attempt with the total value of the project about one sixth of the former amount. It would seem that the Western agencies will only fund specific 'safety improvement' work, some of which may well be carried out after the reactors begin operating, raising serious concerns regarding the safety standard of the reactors once

operational and the logic of the whole process.

Should the EBRD and European Commission proceed with the currently envisaged proposal, it would require the abandonment of the previous K2R4 project and 800 million Euro (US\$ 1 billion) of pledges. The European Commission's share of the project was roughly 680 million Euro (US\$ 856 million).

The pledged amount has been used to justify proposals an extension of the Euratom loan facility by a further 2 billion Euro (US\$ 2.5 billion) – the Commission claimed that the money was allocated for K2R4 and thus justified requesting more funds from the European Council for the Euratom loan facility.

At this stage the important issue is that the EBRD and Euratom should not assist with the completion of the K2R4 reactors. Construction was started at

these reactors nearly 20 years ago and the interrupted construction process and lack of comprehensive mothballing processes may have led to deterioration of already installed and now outdated components.

Furthermore, the proposal to upgrade the reactors post completion underlines the fact that safety appears less important than political posturing and that the Western agencies appear willing to help with the completion of 'cut price' constructions.

References:

(1) *Economic Assessment of the Khmelnytsky 2 and Rovno 4 Nuclear Reactors in Ukraine, Volume 1: Main Report*, 4 February 1997, (Panel) page 6

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FIRE PROTECTION VIOLATIONS AT U.S. NUCLEAR POWER PLANTS

Dozens of U.S. nuclear power plants (NPP) are emerging as flagrant violators to current fire protection law at sites including Oyster Creek, Shearon Harris, Diablo Canyon, Arkansas Nuclear One, Davis-Besse, McGuire, Crystal River, Sequoyah, St. Lucie and Comanche Peak.

(601.5566) NIRS - Many of the culpable NPP operators were under NRC Orders, dating back to 1998, to restore fire protection features required to protect reactor shutdown equipment in the event of a serious fire and chose to ignore compliance.

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The next issue (602) will be mailed out 30 January 2004.

The U.S. Nuclear Regulatory Commission (NRC) is now proposing to relax enforcement of these industry-wide fire code violations at NPPs until it can finalize a rule change on requirements currently mandating that control room operated electrical circuits used for the automated shut down of the reactor be maintained free from fire damage in the event of a serious fire.

NRC would instead allow nuclear power station licensees to optionally work around longstanding violations involving bogus fire barriers and other structural fire protection deficiencies by instead sending employees into the reactor building during a fire to "manually operate" reactor shutdown equipment, potentially in areas fully involved in fire, smoke and radiation hazards. The proposed actions would allow NPP operators to sacrifice

automated electrical circuits to a fire rather than restore functionality to required fire protection features for reactor safe shutdown circuitry. (1)

Current federal law mandates that NPP operators physically protect emergency backup electrical systems (power, control and instrumentation cables) used to remotely shut down the reactor from the control room. (2)

The affected provision requires the physical fire protection of electrical cabling for a minimum of 3-hours or; 1-hour in conjunction with sprinkler and smoke detector equipment or; alternately, physical separation of redundant cables with a minimum of 20-feet with sprinklers and detectors in the same area. The prescriptive fire code was put in place for U.S. NPPs following the fire at Alabama's Browns

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 4 of *WISE Bulletin*, we wrote about plans for a reactor in Libya: “The Federation of American Scientists (FAS) has called on the Soviet Union to halt the planned sale of a 400 MW nuclear power reactor to Libya. The FAS opposed the sale because Libya, despite the fact that it has ratified the Nuclear Non-Proliferation treaty, has openly declared its intention to acquire nuclear weapons.” (*WISE Bulletin* 4, March 1979)

Now

Since Colonel Gaddafi came to power in 1969, Libya tried to obtain or develop a nuclear weapon. It had cooperation agreements with countries such as Egypt, China, Pakistan and India. (*The Nuclear Fix: A guide to nuclear activities in the Third World*, WISE, 1982)

In 1983 a research complex was opened at Tadjoura, near Tripoli, a 10 MW research reactor was supplied by the former Soviet Union. (www.globalsecurity.org, 21 December 2003)

Attempts to obtain a nuclear power plant were made in the 1970s and 1980s. A deal for two Soviet-designed 440 MW reactors, worth US\$ 4 billion, was suspended by Libya in 1986. Contract negotiations worth US\$ 1 billion with the Belgian firm Belgonucleaire were cancelled in 1984 after pressure from the U.S. (www.globalsecurity.org, 21 December 2003)

Last December, Libya officially admitted to developing a nuclear, chemical and biological weapons’ program and decided to open up its facilities for inspections. Since March 2003, secret negotiations had taken place with U.S. and British intelligence officials.

For more information and backgrounds see the article “Libya seeks respectability” in this issue.

Ferry nuclear power station on 22 March, 1975 when an employee using a candle flame to check for air leaks along electrical cable trays under the reactor control room ignited polyurethane foam insulating material. The fire quickly spread from the cable spreading room into the reactor building and burned out of control for seven and half hours, destroying over 1600 electrical cables including 628 safety-related cable systems. A catastrophic nuclear accident was narrowly averted by “sheer luck” according to nuclear engineers.

In 1992, the majority of the U.S. nuclear power industry was caught using “inoperable” Thermo-Lag 330 fire barriers credited for protecting reactor safe shutdown systems from fire damage. (3)

Other NPP operators were found in violation of the alternate requirement for 20 feet of separation between backup safe shutdown wiring. By 1998, NRC began issuing a series of Confirmatory Orders requiring licensees to replace bogus fire barriers and restore fire barrier operability at NPPs.

Through a set of responses to the Confirmatory Orders licensees affirmed that NPPs would be brought into compliance with federal law by restoring operability to the fire barriers.

Between 2000 and 2003, renewed NRC fire inspections discovered that a significantly large number of these NPP operators never fulfilled obligations to restore fire barrier operability. Instead, industry quietly opted to sacrifice these electrical systems in a fire. In the event that the safe shutdown electrical wiring burned away due to nonfunctional fire barriers and inadequate separation, operators would simply send someone from the control room throughout the plant to manually operate the once automated equipment by throwing a switch, pulling a circuit breaker, or turning a valve to shutdown the reactor.

In many cases, the tasks involved numerous and complex manual actions. One plant operator was discovered with over 100 unapproved and illegal manual actions. Another licensee planned to send operators into areas involved in the fire. NRC

identified that licensees had taken manual actions to the “extreme interpretation” resulting in a significant increase in risk of reactor core damage in the event of fire. “This condition is similar to the condition Browns Ferry was in prior to the 1975 fire.” (4)

NRC discovered that violations were so numerous throughout the industry that an enforcement effort “creates a prospect of significant resource expenditure without clear safety benefits. Licensees faced with enforcement actions might flood NRC with exemption or deviation requests, which would divert NRC resources from more significant safety issues and may not result in any net safety improvement if the operator manual actions are determined to be acceptable.” (5)

Faced with widespread and stubborn industry non-compliance, NRC is now poised to suspend its regulatory enforcement of this section of the fire code nullifying long held industry commitments to restore fire barrier operability and cable separation requirements. Instead, NRC proposes to provide licensees with an option to voluntarily abandon physical fire

protection requirements through an alternate loose set of criteria that would bring "feasible" manual actions into interim "compliance." Then, through subsequent rulemaking, NRC proposes to codify the interim criteria into law deeming manual actions not only legal but providing the equivalent level of safety as qualified fire barriers, sprinkler and smoke detection systems and the physical separation for reactor electrical cables. NRC would suspend its decade old confrontation with the industry over fire protection violations and abandon its commitment made by Commissioner Ivan Selin before Congress in March 1993 to restore the mandated fire barrier operability for the protection of reactor safe shutdown equipment and the public health and safety in the event of fire. (6)

Sources:

- (1) Federal Register: 26 November 2003 (Volume 68 Number 228) "Draft Criteria for Determining Feasibility of Manual Actions To Achieve Post-Fire Safe Shutdown," [Page 66501-66503]
- (2) Chapter 10 Code of Federal Regulations Part 50 Appendix R Section III.G.2.
- (3) Bulletin No. 92-01, "Failure of Thermo-Lag 330 Fire Barrier Systems To Maintain Cabling in Wide Cable Trays and Small Conduits Free From Fire Damage," U.S. Nuclear Regulatory Commission, 24 June 1992.
- (4) "White Paper For Manual Actions," John Hannon, Chief PSB/DSSA/NRR, US NRC, Letter to Alex Marion, Nuclear Energy Institute, 29 November 2001, Enclosure, FOIA 2003-0358 Appendix D22, p.1.
- (5) "Rulemaking Plan On Post-Fire

PUBLIC COMMENTS OPPOSING ABANDONMENT OF FIRE PROTECTION LAW URGENTLY NEEDED.

WHAT YOU CAN DO

Demand NRC enforce current fire protection laws established. Demand NRC uphold commitments to Congress to restore fire protection operability with qualified fire barrier systems at U.S. nuclear power stations.

WHAT YOU CAN SAY

"RE: PUBLIC COMMENT ON DRAFT CRITERIA ON MANUAL ACTIONS TO ACHIEVE POST-FIRE SAFE SHUTDOWN

To Whom It May Concern: As a result of the near catastrophic fire at Browns Ferry nuclear power station in 1975, NRC is mandated by federal law to require electrical systems used for the automated shutdown of the reactor from the control room be maintained free from fire damage in the event of a serious fire. I am opposed to the proposed relaxation of enforcement of current fire code that would allow non-compliant reactor operators to sacrifice automated reactor shutdown electrical systems and instead substitute non-validated manual actions that increase unacceptable and undue risks to public health and safety and the environment in the event of a reactor fire."

Don't forget to include name, address and date

DEADLINE; Please submit your written comments by 26 January 2004

SEND TO Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; Email : nrcprep@nrc.gov

Available Resource Materials:

"Nuclear Agency Changes Its Stance on a Fire Safety Proposal," Matt Wald, New York Times, 26 November 2003.

Visit NRC website at www.nrc.gov/reactors/operating/ops-experience/fire-protection/technical-issues.html#manual

For additional information see the NIRS website (www.nirs.org) or contact the NIRS office.

Operator Manual Actions," SECY-03-0100, U.S. NRC, 17 June 2003, [Page 4].
(6) "Fire Safety At Nuclear Power Stations," Hearing Before the Subcommittee On Oversight and Investigations of the Committee On Energy and Commerce, House of

Representatives, 103rd Congress, 3 March 1993.

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YUCCA'S DAY IN COURT

The long-awaited oral arguments against the proposed national high-level radioactive waste dump targeted at Yucca Mountain, Nevada will take place 14 January before the U.S. Court of Appeals for the Washington, D.C. Circuit - a leading U.S. court for complex administrative law cases, second only to the U.S. Supreme Court.

(601.5567) NIRS -Briefs have already been filed, and the cases have been consolidated. Last August, in an important victory for Yucca opponents, the Court placed the cases in its "complex" docket, giving the judges more time for review and giving the State of Nevada (NV) and environmental group attorneys more time to present arguments against the dump.

A coalition of national and Nevada-based environmental groups is challenging the U.S. Environmental Protection Agency's (EPA) woefully weak radiation regulations for Yucca. Natural Resource Defense Council attorney, Geoff Fettus, will represent the coalition's case before the three-judge panel. The coalition's main argument is that EPA's 18-km (11-mile)

radioactive contamination dilution zone in the groundwater surrounding the dump would violate the Safe Drinking Water Act. The aquifer beneath Yucca is used for drinking and irrigation for one of Nevada's largest and most prosperous farming communities, Amargosa Valley. In addition, Yucca's groundwater feeds Ash Meadows; a National Wildlife Refuge

home to 12 endangered or threatened species, including a desert pupfish species found nowhere else on Earth. (1)

“The EPA’s Yucca Mountain rule assumes the proposed repository will leak and inappropriately allows the Department of Energy (DOE) to rely on dilution in order to meet national standards. The agency should not be permitted to misuse its discretionary powers to undermine the Safe Drinking Water Act in this way,” said Fettus. (2)

The groups also seek to overturn EPA’s arbitrary 10,000-year limit on regulatory enforcement. Even the DOE has admitted that burial containers could fail soon after 10,000 years (the State of Nevada has predicted cask failure much more rapidly), and predicts the peak radiation doses to “receptors” (people, that is) downstream would occur 100,000 to 300,000 years after burial. As a group of U.S. Members of Congress commented to EPA before it issued its final rules, to cut off regulation at 10,000 years is to be aware of future dangers but do nothing about them.

NV has a similar groundwater protection lawsuit against EPA, while the industry’s Nuclear Energy Institute has sued EPA’s Yucca standard for being too stringent.

RAIL ROUTE

On 23 December, DOE announced Caliente as the preferred gateway into Nevada (NV) for high-level radioactive waste trains. A 300 mile long railway through environmentally sensitive areas (including endangered desert tortoise habitat) would be built across four mountain ranges to avoid the populous Las Vegas Valley, the NV nuclear weapons test site, as well as a very active U.S. Air Force bombing range. DOE puts the cost at US\$ 880 million, but NV predicts that as the largest rail construction project in the U.S. since World War II, it will cost US\$ 2.3 billion.

Las Vegas Review-Journal, 24 and 30 December 2003

NV has five more major cases: a constitutional case against the U.S. government; a site suitability case against DOE; an environmental case against DOE; a case against the President’s and Energy Secretary’s site recommendations; and a case against the U.S. Nuclear Regulatory Commission’s (NRC) Yucca licensing standards.

NV’s constitutional case argues that under the U.S. Constitution’s 10th Amendment and other provisions, 49 states cannot gang up on a single, politically vulnerable state to impose an unwanted burden without a compelling, rational basis. NV holds that the utter abandonment of criteria for genuine geologic isolation at Yucca negated any such basis, and that the application of one set of repository rules at Yucca while applying a safer set of rules for any other repository site in the U.S. is unfair and illegal. NV seeks to have the July 2002 U.S. House and Senate resolutions overriding NV’s veto of Yucca, ruled unconstitutional, which could kill the dump outright.

NV’s site suitability case argues that DOE’s changing the rules at the very last second violated the Nuclear Waste Policy Act’s (NWPA) requirement that a geologic repository isolate waste from the environment. This requirement for geologic isolation dates back to a 1957 National Academy of Science’s recommendation. A major DOE study in 1980 reaffirmed the importance of such isolation, which became codified by Congress in the 1982 NWPA. The legislative history of that law clearly states that geologic isolation should hold for up to 250,000 years. However a series of DOE tests, from 1996 to 2000, revealed that Yucca’s geology could not provide such containment. In 1996, DOE conducted the first of 17 planned site suitability tests. This test, on groundwater travel time, showed Yucca to be a miserable failure. DOE discovered that in less than 50 years rainwater had percolated down from Yucca’s surface to the depth of the proposee much more difficult to obtain.

NV’s environmental case argues that

NWTRB CHAIR RESIGNS

Michael Corradini, appointed June 2002 by George W. Bush to head the scientific and engineering panel (Nuclear Waste Technical Review Board) established by Congress to oversee Department of Energy technical work at Yucca Mountain, resigned on 30 December amidst on-going allegations of bias in favor of opening the dump and protests from Yucca opponents. Before his appointment to NWTRB he testified before a Senate Panel in 2001 that he endorsed the Yucca project and called waste disposal more a political problem than a technical one. Furthermore, Corradini’s previous association with a DOE laboratory and DOE’s Nuclear Energy Research Advisory Committee, and other public statements created a conflict of interest. Shortly after his appointment to the NWTRB, a University of Wisconsin department (which Corradini chairs) received a nuclear engineering grant from DOE.

NuclearFuel, 5 January 2004

DOE has egregiously violated the National Environmental Policy Act, by failing to answer even basic questions about the proposed dump design and transport plan. NV seeks to force DOE back to the drawing board on its Yucca Environmental Impact Statement, which would cause major delays.

NV’s case against the presidential, DOE, and congressional site recommendations holds that those decisions were based on flawed, incomplete, and illegal analyses and rules as described above (George W. Bush was supposed to review 20 years worth of scientific studies and public comments, but rubberstamped DOE’s site recommendation in less than 24 hours!). (3)

The remedy would be for the court to nullify those recommendations and require DOE to complete the site characterization in a legal manner. NV also argues that NRC’s Yucca licensing rules violate the NWPA and Atomic Energy Act because: the 10,000 year regulatory cut-off would not protect

Nevadans from Yucca's peak doses; no minimum requirements for geologic suitability are established; defense-in-depth through application of "multiple barriers" (both natural geology and engineering) is not required.

The court could rule on individual cases or on the overall consolidated case as early as mid-2004. Certain rulings could kill the Yucca dump once and for all, or could cause major delays for the project if more stringent regulations are required of the federal agencies involved. If not blocked by the court, DOE has announced it will file its application to NRC for a construction/operating license by the end of 2004 (although the NWPA required DOE to have submitted its application by October 23, 2002!). (4)

The court's rulings could cause major delays to DOE's application, or could

require that much stronger rules be applied to Yucca's NRC licensing proceeding. NV, NIRS, and other governmental agencies and non-governmental organizations are gearing up to challenge the NRC licensing process at every turn on procedural, technical, and safety grounds.

The licensing proceeding would last three to four years, with hearings in Nevada and perhaps also Washington, D.C. Already, the electronic docket for NRC's Yucca licensing is a whopping 42 million pages long! (5)

Sources:

(1) National Wildlife Refuge exhibit at the Smithsonian Institution Museum of Natural History, Washington, D.C., December 2003.

(2) A map revealing EPA's blatant gerrymandering of the compliance boundary in the direction of groundwater flow can be found under "Fact Sheets" at

www.citizen.org/cmep/energy_enviro_nuclear/nuclear_waste/high_level/_eparad/

(3) DOE Secretary Abraham recommended Yucca's suitability to Bush on 14 February 2002, submitting a 1 m (3 ft) thick document weighing over 30 kg (67 lbs.) for White House review. Bush's approval came on 15 February.

(4) Bush endorsed the congressional override of NV's veto on 23 July 2002. The NWPA required DOE to submit its license application by 90 days later. DOE ignored the deadline.

(5) These summaries of the legal cases comes from "Nevada's Yucca Mountain Lawsuits" and a press briefing presented by the State of Nevada Agency for Nuclear Project's legal team at the National Press Club in Washington, D.C. on 18 December 2003. See www.state.nv.us/nucwaste/policy.htm for more information.

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U.K. PARLIAMENT CONSIDERS INDUSTRY RESTRUCTURING

The UK's Parliament upper chamber, the House of Lords, will next week begin detailed scrutiny of a draft law intended to re-structure the UK's nuclear sector, under plans first announced in 2001. In an omnibus 'Energy Bill', which also includes further powers to support the rapid expansion of renewables, the Government will set up a Nuclear Decommissioning Authority (NDA).

(601.5568) FOE Europe - The NDA will take over the ownership and responsibility for most of the sites that until now belonged to both British Nuclear Fuels Ltd (BNFL) and the UK Atomic Energy Authority (UKAEA), and then steadily 'discharge' the liabilities that exist there.

The new agency is presented as providing a unified and publicly credible approach to managing the UK's 'nuclear legacy' but closer scrutiny shows this is far from the case.

Firstly, the NDA is responsible for only some and not all the UK's nuclear sites, as the seven sites belonging to British Energy have been left under separate and private ownership. Nor has the NDA responsibility for the UK's considerable military nuclear liabilities from prior and current weapons systems.

Secondly, the NDA is responsible only for decommissioning and not for waste management and/or disposal, in part because the UK is still trying to develop a waste management policy but also because the industry and its sponsors in government would prefer to defer long into the future the political and financial costs of building a nuclear dump.

Thirdly, BNFL has been allowed to carry on its operations, particularly at the Sellafield site. Reprocessing (in both the THORP and Magnox plants) adds more materials (e.g. plutonium) to the inventory of radioactive wastes that the NDA is supposed to be trying to reduce or deal with. This is foolish in financial terms as well as the obvious safety, security and environmental concerns.

Finally, the UK has not ruled out building new reactors, which would of

course, with or without reprocessing, increase the nuclear legacy even further.

The plans have been heavily criticised by Greenpeace and others, who say that loopholes introduced in the draft Bill last year have created mechanisms for the permanent financial aid to the nuclear sector. This applies not just to state-owned BNFL and UKAEA, but also to British Energy in the private sector and indeed any other nuclear operator that may come along in the future. Such aid appears to be incompatible with EU internal market rules intended to ensure fair competition amongst energy suppliers.

The Bill is expected to become law by summer, so as to allow the NDA to be up and running either in the autumn or early next year. When operational, the Agency is expected to consume around GBP 1000 million (US\$ 1.8

billion) per year for the next ten years, and more thereafter.

Meanwhile, a separate review by government of BNFL's future strategy has concluded that the company will be allowed to keep its Westinghouse reactor division, which it acquired in 1998. Previous speculation had suggested Westinghouse might be sold

off, as it did not fit with the view that sees BNFL becoming solely a nuclear clean-up company.

However, this was not the only view within the UK government. The industry ministry (DTI), effectively the owner of Westinghouse via BNFL, has promised to return the question of supporting new reactors, which could

potentially be from Westinghouse. The timing? In 2006, just after the next general election.

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www.greenpeace.org.uk or write to pete.roche@uk.greenpeace.org

LIBYA SEEKS RESPECTABILITY

The sensational news of Colonel Gaddafi's pledge, on 19 December 2003, to fully disclose Libya's secret weapons of mass destruction programs and dismantle all said programs has led to renewed calls for a nuclear free zone in the Middle East from neighboring states. In this article, we also look at the history of Libya's nuclear weapons program.

(601.5569) WISE Amsterdam –

Following news of Libya's decision to give up its secret weapons, it was revealed that U.S. and British intelligence officials had been in secret negotiations with, and initiated by, Colonel Gaddafi since March 2003. Gaddafi is said to have co-operated, composing proposals for disarming and allowing U.N. inspections and volunteered information on weapons programs that western intelligence agencies were previously unaware of.

Disclosure

Gaddafi has also promised to sign the International Atomic Energy Agency's (IAEA) Inspections Protocol, which allows intrusive and unannounced visits by IAEA experts to all nuclear sites. (1)

Mohamed El-Baradei, Director General of the IAEA, recently visited Libya, with other senior experts, and was taken to 4 sites near Tripoli and shown equipment relevant to the uranium enrichment program. El-Baradei will present Libya's intention (to sign additional protocol) to the next IAEA Board of Governors meeting in March. Once the Board agrees, Tripoli can sign. (2)

The conclusion made following the IAEA's 3-day visit was that Libya was not too close to producing a nuclear weapon. However, British and American officials who made secret visits to weapons laboratories in October and December 2003 were of the opinion that Libya was "well on

the way" to a nuclear bomb. They were shown "the substances, equipment and programs" that could lead to the production of banned weapons. British and American experts visited 10 sites related to Libya's nuclear program and found them more advanced than anticipated. One senior diplomat commented "we saw uranium enrichment going ahead", although it was also reported that the components of the centrifuge program to enrich uranium were seen but it was not a fully operational system. (3)

Despite these differing opinions, there is no suggestion that Libya is now attempting to hide evidence from IAEA inspectors. Given that U.S. and British officials visited for 3 weeks and the IAEA for 3 days, these discrepancies are unsurprising. (4)

Middle East

With news of Libya's return to the fold being greeted with gushing praise around world, several Middle Eastern and Arab states have called on Israel to follow suit and disclose information on its own secret weapons programs.(5)

Egypt, vocal for years on Israel's weapons, has led calls for the country to ratify the Nuclear Non-Proliferation Treaty (NPT) and helps establish a Nuclear Free Zone in the Middle East. (6)

Taking advantage of its last days on the U.N. Security Council, Syria requested a resolution intended to rid the Middle East region of all nuclear,

chemical and biological weapons. Amongst those expressing concern at the text within the proposal were the U.S., U.K., and Pakistan. Deputy U.S. Ambassador, James Cunningham said that the draft was "wrong in substance, wrong in timing". The resolution was perceived as an attack on Israel, which is the only Middle Eastern country believed to actually *have* nuclear weapons. (7)

One source of tension between Libya and Israel has been Gaddafi's refusal to recognize Israel and his repeated calls for its destruction. Despite this, unconfirmed rumors abound in sections of the Arabic and Israeli media that the two countries are exploring the possibility of establishing relations. (8)

Embargoed

Since the imposition of sanctions against Libya, due to its open support of militant groups including the Irish Republic Army (IRA) and Palestinian Liberation Organization (PLO), it has worked on renewing formal diplomatic relations with western countries, especially the U.S.

America's embargo against Libya began in 1981 with bans on travel, direct import and export trade and commercial contracts. Universal oil and travel sanctions and the loss of American oil technology, on which Libya had relied, were great blows. The deteriorated state of the country and its valuable oil infrastructure is

said to have helped convince Gaddafi of the need for reform.

U.N. sanctions began, in 1992, with an air and arms embargo and a ban on sales of oil equipment. Suspended in 1999, when Libya surrendered the two suspects in the bombing of the PanAm flight over the Scottish town of Lockerbie in 1988, sanctions were subsequently ended on 12 September 2003 when Libya finally accepted responsibility for Lockerbie, renounced terrorism and agreed compensation settlements for families of the Lockerbie victims. France was expected to use its veto to block the vote ending sanctions but was dissuaded when Libya agreed to increase compensation for victims of the 1989 bombing of a French UTA airliner.

Although the U.S. did not oppose the lifting of U.N. sanctions, its own remain in place. The Bush administration has said that sanctions will remain until there is “tangible evidence” of economic and political reform along with the fulfillment of the pledge to dismantle WMD programs. Some in the Bush administration have attempted to portray

ISRAEL SEEKS VANUNU’S SILENCE

Mordechai Vanunu’s 18-year prison sentence, for revealing Israel’s nuclear secrets (see *WISE/NIRS Nuclear Monitor* 593.5545: “The history of Israel’s nuclear bomb”), is almost at an end – he is due for release on 21 or 22 April. However, Israeli security sources have reportedly said that his freedom may be made conditional upon his silence. Vanunu could be barred from leaving the country under emergency laws reserved for cases of national security. In 2003, Vanunu refused to sign a non-disclosure pledge in exchange for the promise of early release leaving authorities concerned that he intends to continue his revelations once freed. Vanunu’s adoptive mother, American peace activist Mary Eoloff, has said that he still “believes in the freedom of speech”.

Reuters, 7 January 2004

Libya’s new spirit of nuclear disclosure as a victory for the U.S. policy but Libya stands to benefit most.

There are many theories as to Gaddafi’s motivation. The seizure of a shipment of centrifuge parts, carried on a German-owned freighter and originating from a Gulf port, destined for use in Libya’s illegal weapons programs in October 2003 is being reported as the ‘grease that oiled the wheels’. (9)

While some sections of the media suggest the invasion of Iraq as the catalyst, others believe that the crippled state of Libya’s economy, with unemployment estimated as high as 30%, has forced Gaddafi to cast his lot with the West and globalization.

The Libyan government has been actively seeking foreign investment and is in the process of undertaking the privatization of many state-owned companies. Even before the compensation settlement for Lockerbie was agreed Gaddafi appeared to be preparing his country for change.

There appears to be strategic calculation guiding Gaddafi’s new policies and an understandable desire to rid Libya of the ‘rogue’ status. New foreign policy has been introduced and part of that includes breaking ties with Arab neighbors and withdrawing Libya from the Arab League, which promotes trade and security amongst Arab states. (10)

If U.S. sanctions are dropped, US\$ 1 billion of frozen Libyan assets held at American banks will be released and its oil companies whose modern oil technology Libya needs and covets could return. (11)

Gaddafi appears to accept that abandoning clandestine efforts to build an atomic bomb is necessary in order to develop Libya’s economy and improve the living standards of its people.

History of Libya’s Nuclear Program

The discovery of oil, in 1959, transformed Libya into a wealthy monarchy ruled for a decade by King Idris until

overthrown in a coup. Colonel Muammar Gaddafi came to power in September 1969 and immediately began efforts to secure an atomic bomb or the technology to construct one. (12)

Israel, Gaddafi’s sworn enemy, was understood to have nuclear weapons and so Libya should have the capability also. (13)

After coming to power, Gaddafi sent representatives to Egypt to seek help buying an atomic bomb but they returned empty handed. Gaddafi then turned to China but was refused assistance with production and instead offered aid with research.

Unperturbed, Gaddafi searched on eventually finding a like-minded friend in Pakistan’s former Prime Minister Ali Bhutto, after allegedly offering US\$ 1 million in gold to anyone who provide him with an atomic bomb. It is widely acknowledged that Libya provided finances, as well as uranium “yellow cake” originating from Niger, to fund Pakistan’s nuclear weapons program hoping for repayment with a nuclear bomb or nuclear weapons. (14)

Libya also reportedly offered US\$ 8 billion to India for a nuclear weapon, following the country’s successful weapons test in 1974. India rejected Libya’s offer. (15)

Although widely considered as amongst the most dangerous countries with regard to proliferation of weapons of mass destruction, Libya joined the IAEA in 1963, reaffirmed commitment to the NPT by ratifying in 1975 (after pressure of the Soviet Union) and in 1980 agreed to place all nuclear installations under international inspection.

In 1983, the Tadjoura research center, located near Tripoli, opened, staffed by 750 Libyan specialists and technicians, aided by Soviet staff. Students of nuclear energy were sent to American and European universities to further studies until 1983 when America banned the training of Libyans in nuclear science. (16)

A 10 MW research reactor (training and technical assistance included) was supplied by the Soviet Union in 1979, including the high enriched uranium fuel to run it. Libya also tried to realize a reactor for electricity production. In 1976, France apparently promised a heavy water plant and "primitive" enrichment technology, the deal was later rejected. Libya signed an agreement with India for a program for "peaceful use", but that deal soured when India refused assistance in nuclear weapons' development. Advanced plans to build one or two 440 MW reactors on the Gulf of Sirte, between Tripoli and Bengazi, were developed with the Soviet Union during the 1970s. (17)

The plant would cost US\$ 4 billion with repayments to be made over 15-18 years. However, in 1986 Libya suspended plans for the construction of nine 440-MW power reactors indefinitely. Sanctions during the 1980s brought the end of official cooperation but reports suggest that discussions between the Russia and Libya continued during the 1990s.

At the same time Libya also approached Belgium and negotiated with Belgonucleaire to take over the engineering contract for the planned plant and supply of required equipment. The U.S. objected, fearing use of the equipment in weapons develop-

U.S. Indian Point nuclear power plant criticized for shutdowns. The Indian Point NPP had thrice as many unplanned shutdowns within a 12-month period as any other plant in the U.S., an official of the Nuclear Regulatory Commission (NRC) said on 24 December. In a recent report, the agency stated that failure to follow emergency procedures, insufficient quality control, poor preventive maintenance and poor contractor oversight contributed to the shutdowns at the plant in Buchanan, New York. The report was initiated after the plant's reactors (Indian Point 2 and 3), experienced a combined total of eight unplanned shutdowns in a period of 18

months and Belgium refused the contract worth US\$ 1 billion in 1984.

To obtain the necessary uranium for its nuclear program, Libya imported uranium from several countries. In 1973, Libya occupied the Aouzou Strip in Chad - an area rich in uranium deposits. In 1974, Libya entered into a Nuclear Co-operation Treaty with Argentina and according to its terms, would receive equipment, technical training and advice on uranium prospecting and enrichment. (18)

In 1981, it was discussing cooperation with Madagascar to exploit uranium deposits on the island in exchange for agricultural support. (19)

In 1980, 380 tons of uranium was imported from Niger, followed by another 1212 tons in 1981 making Libya the second largest client of Niger's uranium, after France. Western countries suspected the resale of uranium to other countries given that Libya's one research reactor was already supplied with Russian fuel. (20)

In 1998, uranium ore deposits were found in the south of Libya, near the borders with Niger and Chad. It approached both countries for cooperation (by that time the occupation of Chad had ended). Niger showed interest but Chad refused to cooperate fearing complications following the

1973 occupation. (21)

In 2002, the impoverished Central African Republic signed a 99-year treaty with Libya, allowing it to dig for oil, uranium and other minerals. The deal was signed a year after Gaddafi sent troops to help the country's president crush a rebellion. (22)

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- (2) Reuters, 27 December 2003
- (3) BBC News, 20 December 2003
- (4) BBC News, 4 January 2004
- (5) *WISE/NIRS Nuclear Monitor* 593.5545: The history of Israel's nuclear bomb
- (6) BBC News, 21 December 2003
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- (13) GlobalSecurity.org, Libyan Nuclear Weapons, 21 December 2003
- (14) *The Nuclear Fix: A guide to nuclear activities in the Third World*, WISE 1982
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- (21) *Der Spiegel*, 2 March 1998
- (22) Reuters, 11 September 2002

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IN BRIEF

months. The plant has been a focus of concern since the terror attacks of 11 September 2001 following the discovery that one of the hijacked planes had flown close to Indian Point on its way to the World Trade Center. The 47-page report, which examined shutdowns from late December 2001 to August 2003, says diesel generators in offices at the plant failed during the blackout of 14 August, forcing technical support and emergency response crews to relocate and use contingency plans. Both systems were previously identified as problematic but were never repaired. According to Riverkeeper, the Hudson River watchdog group, the report is once

more a piece of evidence that should lead to the shutting down of the plant. ***The New York Times*, 25 December 2003**

Japanese nuclear power plants projects in doubt. Tohoku Electric Power decided on 25 December to abandon plans for an 825 MW reactor in Makimachi, Niigata Prefecture. The construction of the Makimachi plant was listed in the government's 1981 plan for developing power sources, but the project was dogged with difficulty where land acquisition was concerned. A referendum in 1996 saw about 60 percent of local residents vote against

the project. On 18 December the Supreme Court ruled against the project's supporters, who had attempted to gain control of land from a local citizens' group opposed to the project. According to Tohoku Electric Power, the decision on the Makimachi project would not affect other plans to build new reactors. Earlier in December Kansai Electric Power Co., Chubu Electric Power Co. and Hokuriku Electric Power Co. decided to cancel the construction of a reactor in Suzu, Ishikawa Prefecture.

The Daily Yomiuri, 26 December 2003; WNA News Briefing 24 December – 6 January 2004

No decision on ITER. At the 20 December meeting of ITER members in Washington D.C., no decision was taken on where the experimental reactor will be built. The U.S., South Korea and Japan backed the Japanese site of Rokkasho-mura, the European Union, Russia and China the French Cadarache site. A next meeting is to be held in February. (See also *WISE/NIRS Nuclear Monitor* 600: "In brief")
Reuters, 7 January 2004

Finland: TVO signed contract for fifth reactor. On 18 December, utility TVO signed a fixed price contract with French Framatome and German Siemens for the "fifth" NPP.
WNA Weekly Digest, 19 December 2003

The costs of reprocessing vs. direct disposal studied. The Belfer Center for Science & International Affairs of the U.S. Harvard University recently released a report comparing the costs of reprocessing vs. direct disposal of spent fuel. According to the report, reprocessing is the most expensive option. Reprocessing at an estimated price of US\$ 1000 per kilogram HM results in an 80% increase of fuel back-end costs. Only when "fresh" uranium prices reach US\$360 (more than ten times of present value) per kilogram, can reprocessing compete with the direct disposal option. Such a price is not foreseen for many decades. The study team also recognized that their

figure of US\$1000 per kilogram for reprocessing is in fact too low - they did not include the costs of plutonium storage, additional security, interim fuel storage and took low estimates for MOX fuel production in the reprocessing option. The report can be found at: bcsia.ksg.harvard.edu/BCSIA_content/documents/econ_reprocessing_m_bunn.pdf.

The Economics of Reprocessing vs. Direct Disposal of Spent Nuclear Fuel, Harvard University, December 2003

Brazil resists plan to allow spot inspection of nuclear site. Brazil has announced that, by mid-2004, it expects to start producing enriched uranium and that within a decade it intends to begin exporting it. However, it is resisting allowing international inspectors unimpeded access to the plant that will produce the uranium. According to Brazilian officials, the uranium enrichment effort is aimed at providing fuel for the country's reactors. Brazil asserts that as a peaceful nation it should not be subject to the same regime of unannounced spot inspections by the IAEA that Iran and Libya have recently accepted.

The Minister of Science and Technology said that all his country has is a couple of "itty-bitty reactors". Furthermore he criticized the IAEA's inspections as "idiotic" and "foolish". After years of resistance (and a secret weapons program), Brazil adhered to the Nuclear Non-proliferation Treaty in 1997 and has since permitted limited, controlled visits to its facilities.

The New York Times, 28 December 2003

Taipower's Lungmen NPP budget frozen. On 31 December anti-nuclear groups in Taiwan urged the Legislative Yuan to review part of the state-run Taiwan Power Company's (Taipower) budget proposal, which asked for NT\$3.92 billion (US\$ 116 million) this year to continue the "Fourth Nuclear Power Plant" (Lungmen NPP) construction. The Legislative Yuan's Economics and Energy Committee decided to

freeze the allocation on the same day. Dozens of anti-nuke activists and residents from Kungliao Township, Taipei County, where the controversial plant is located, carried out a sit-in demonstration in front of the Legislative Yuan. Wu Wen-tung, spokesman for the Kungliao-based Yenliao Anti-Nuclear Self-Help Association, stressed that President Chen Shui-bian promised to hold a referendum on the plant's future. Originally to be held on 20 March (presidential elections), the referendum was recently delayed but until an unspecified date.

Taipei Times, 1 and 6 January 2004; WNA News Briefing 24 December – 6 January 2004

Uranium price at end of 2003. The uranium prices finished the year 2003 at US\$14.50 per pound U₃O₈, which is 42% higher than at the beginning of that year. In our yearly overview of uranium mining developments in 2003 (*WISE/NIRS Nuclear Monitor* 600.5564: "Uranium mining in 2003"), we noted a price of US\$ 13.75 as of 8 December.
WNA Weekly Digest, 2 January 2004

Signatures submitted to halt U.S. Hanford nuclear shipments. Activists submitted more than 280,000 signatures on 2 January supporting an initiative to block the federal government from sending more radioactive waste to the Hanford complex in Washington until all existing waste has been cleaned up. The initiative wants to protect the state from being used as the nation's radioactive waste dump. Hanford contains the burial grounds for the equivalent of about 75,000 55-gallon barrels of radioactive waste. The federal government started shipping radioactive and hazardous waste from other sites to Hanford for packaging before sending the material to a waste disposal site (Waste Isolation Pilot Plant) in New Mexico.
The Seattle Times, 3 January 2004

Japanese town of Saga considers request to host national high-level waste repository. The southern

Japanese municipality of Saga has become the first to officially consider hosting a high-level waste (HLW) repository, according to the Nuclear Waste Management Organization of Japan (NUMO). The mayor of Saga was confused by a request at the town council from residents to pass a resolution urging the mayor to initiate negotiations with NUMO to host the country's planned deep geologic repository. Mayor Akio Ikemoto says the request might conflict with existing Saga plans to develop eco-tourism and fishery.

Saga is located in Hata district in western Kochi, a prefecture on the southeastern island of Shikoku, Japan's smallest island. Kochi is one of Japan's most sparsely populated prefectures and is known for its natural beauty. Saga officials also considered offering to host a nuclear

power plant in 1974, but the movement went nowhere because it was opposed by fishermen and other local residents. The repository is planned to be built about 300 meters deep and would be designed to hold 40,000 canisters of vitrified HLW from reprocessing of Japanese spent fuel. **NuclearFuel, 5 January 2004**

Professors want nuclear waste in Seoul. The campus of Seoul National University was offered as site for a nuclear waste dump in an initiative launched by seven professors. On 7 January, a group of academics proposed that the university's president consider plans to house a waste depository. One of the group explained that Mount Gwanak, part of which lies in the southern part of the campus, would be a safe location for nuclear waste. A total of 63 professors

signed the proposal, saying that they could no longer remain spectators of the crisis in Buan County, North Jeolla province. Residents of Buan demonstrated vociferous opposition for months to the government's planned construction of a nuclear waste processing plant on the island of Wido (See WISE/NIRS Nuclear Monitor 600.5561: "Buan victorious as waste dump proposal retracted"). After the government's plan to locate the facility on Wido Island stalled last month, it opened a bidding process to allow regions to apply for the facility, as it continues its 17-year search for a site. **JoongAng Daily, 8 January 2004**

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