

NUCLEAR MONITOR

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DISMANTLING BRITISH ENERGY

The splitting up of nuclear utility British Energy has begun. On February 14, the utility completed the sale of its Canadian joint venture, Bruce Power. It now has until June 30 to dispose of its 50% interest in Amergen, which owns three US reactors. However, finding a buyer for these is proving tricky.

(583.5490) WISE Amsterdam – The sale of Bruce Power is the first stage in the breakup of the crisis-hit utility. British Energy (BE) would have gone bankrupt last year, except that the UK government just won't allow it to go bankrupt.

When liberalization of the UK wholesale electricity market led to falling prices, many generators faced a shortage of cash. BE was particularly hard-hit, since all but one of its power stations are nuclear, and so more expensive than natural gas-fired power stations. The situation was made worse by technical problems at some of BE's nuclear power stations (1).

Citing concerns about nuclear safety and security of electricity supply, the UK government stepped in last year with a series of emergency loans (2). The current loan is 650 million pounds (over US\$1 billion) and was set to expire on 9 March.

However, the Bruce Power sale, plus "standstill" agreements with "significant creditors" were enough to persuade the UK government to extend its emergency loan, at a "reduced level", beyond the 9 March deadline (3).

Major BE creditors include BNFL, a state-owned corporation with financial problems of its own, and Enron, whose accounting scandal has made it a household name (4).

Bruce sale

Creditors must be pleased that BE has raised some cash by selling its stake in Bruce Power, which leases and operates Bruce nuclear generating station in Canada.

BE was bought out by three companies. Cameco Corp, one of BE's partners in Bruce Power, already owned a 15% stake, but increased this to 31.6% at a cost of C\$209 million (US\$137 million). However, not all of

this is "new" money, since the sale price includes part of a cash advance made to Bruce Power in late December 2002 (5). Two other companies have also bought 31.6% stakes: Trans-Canada Pipelines Ltd. and BPC Generation Infrastructure Trust, with unions at the Bruce power station continuing to own the remaining 5.2% (6).

As well as generating cash, this sale relieves BE of the pressure from the Canadian Nuclear Safety Commission, which had expressed concerns that BE's financial guarantees might be inadequate (7).

Amergen: no buyer yet

However, there remains the problem of finding a buyer for BE's 50% share in Amergen, which owns three US reactors: Three Mile Island-1, Clinton and Oyster Creek. Amergen, which is co-owned by Exelon Corp., had originally bought the reactors at knock-down prices, with so much money in the decommissioning funds that it was effectively paid to take the reactors off the utilities' hands.

However, BE cannot find a buyer for its stake in Amergen at the much higher price that it is now asking. BE has until 30 June 2003 to find a buyer, as a condition of the UK government's continuing loan, and if it fails, the whole rescue package for the ill-fated nuclear utility could founder.

The British Energy fiasco demonstrates once again that nuclear power

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is uneconomic. Yet it also shows nuclear proponents are so desperate that they will take anti-nuclear arguments about the danger of accidents and the unsolved nuclear waste problem and use them to justify throwing taxpayers' money at failing nuclear utilities.

References:

1. *WISE/NIRS Nuclear Monitor* 572.5432, "Will the UK government bail out British Energy?"
2. *WISE/NIRS Nuclear Monitor* 573, "In brief" and 574, "In brief".
3. *Platts Nuclear News Flashes*, 14 February 2002
4. *WISE/NIRS Nuclear Monitor* 578.5468,

"Huge state handout aims to keep British Energy afloat"

5. *WNA News Briefing*, 12-18 February 2003
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7. *WISE/NIRS Nuclear Monitor* 573, "In brief"

Contact: WISE Amsterdam

U.S. BUDGET REQUEST: TAX DOLLARS FOR NUCLEAR UTILITIES

The US Department of Energy (DOE) budget request for 2004 includes a large increase for nuclear power coupled with a decrease in most renewable energy programs. Under the plans, tax dollars would be used to pay part of the cost for licensing – and maybe construction – of new nuclear power plants in the US.

(583.5491) NIRS – In early February, the DOE and the US Nuclear Regulatory Commission released their 2004 budget requests. While President Bush has hyped the hydrogen technology program, it is clear from the DOE budget proposal that hydrogen fuel generation is merely a ruse to fund more research into "advanced" nuclear reactors.

For the first time, DOE wants to aid the nuclear industry by giving it taxpayer money directly. It is also apparent that more funding for nuclear power means less funding for energy efficiency and renewable energy programs. Wind and solar energy have only 122 million dollars between them while nuclear power and waste will dump nearly one billion dollars into the nuclear energy bottomless pit. The Administration is requesting over half of this one billion dollars (the

majority of which is *taxpayer* money) to address the intractable nuclear waste problem. It is obvious then, that nuclear power is not the cheapest most environmentally friendly energy source. But most of our readers probably know that already.

Some proposed budget "highlights" (figures in US\$, plus increase/decrease compared to 2003):

- Nuclear fission energy supply programs TOTAL: 391 million (+18%)
- Yucca Mountain: 591 million (161 from the Nuclear Waste Fund; 430 from Taxpayers)
- Reprocessing and Transmutation: 63 million (+246%)
- Solar Energy: 80 million (+0.1%)
- Wind Energy: 42 million (-5.5%)
- Zero-energy buildings: 4 million (-50%)

Nuclear Hydrogen Initiative: \$4 million. This new program also benefits from funding and research in other areas (see Generation IV below). The goal of the Nuclear Hydrogen Initiative would be completing *design* of an economic, commercial-scale hydrogen production system using nuclear energy by 2015. The *FreedomFuel* initiative will be based on technology spawned from this program. DOE specifically selected the Very High Temperature Reactor (VHTR) as a design of interest for the Nuclear Power 2010 program because it could be coupled with hydrogen production.

Fusion Energy Sciences Program: \$257 million. The Fusion Energy Sciences Program includes funding for DOE to enter international negotiations to build the International Thermonuclear Experimental Reactor (ITER) in the hope of developing fusion energy commercially.

Nuclear Energy Technologies: \$48 million. For the current reactor generation there is money for research and development to improve light water reactor performance adding, the administration claims, at least an additional 500 megawatts by 2020. NET also encompasses programs such as Nuclear Power 2010 and Generation IV Nuclear Energy Systems Initiative.

According to the DOE, the goal of **Nuclear Power 2010** will be to *aggressively* (their word) test the one-step licensing procedure for nuclear reactors "in order to pave the way for the development of new, advanced nuclear plants in the United States by 2010." The Department plans to provide limited but critical support for companies willing to demonstrate this new regulatory structure. DOE wants to "enabl(e) an industry decision to deploy at least one new advanced nuclear power plant in the U. S. by 2010... it will cost-share with industry" up to 50%. In the past, DOE has given money to its research labs or encouraged regulations that favor the industry. This proposal would

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25 YEARS AGO

NIRS and WISE both celebrate their 25th anniversaries this year. This is the third article in a series, "25 years ago", comparing anti-nuclear news "then" and "now", to mark our first quarter-century of anti-nuclear campaigning.

Then

In issue 1 of WISE Bulletin we wrote about the reprocessing plant of Eurochemic at Mol (Belgium) and the plans by the Belgian government to take over operation after the plant closed in 1974: "The [Belgian] government will take over the Eurochemic plant at Mol, near the Dutch border. [...] It opened in 1966, but was closed in 1974 after France, the UK and the Netherlands withdrew. The Mol heritage is 650 kgs. of plutonium, 800 cubic meter of highly radioactive waste, 4000 cubic meter of medium-active and 4000 cubic meter of low-active waste, still stored "temporarily" on the site. (*WISE Bulletin* 1, May 1978).

Now

The plan of the Belgian government to take over operation of the ailing reprocessing plant never succeeded. The prospects for an economic operation were too low. In 1984 the plans were cancelled.

The Eurochemic plant was located at the Belgian Study Center for Nuclear Energy (SCK), which also has two research reactors in operation and one closed reactor. In the nearby Dessel is the Belgonucleaire MOX fuel plant as well as the Belgoprocess interim storage for all Belgium's radioactive waste.

In 1987, Mol-Dessel was in the middle of the "Transnuklear" scandal: illegal dealing in radioactive waste between German nuclear power stations and processing facilities at Mol. Instead of treating and compacting German waste and returning it to Germany, Belgian low-level waste was sent to Germany and German medium-level waste remained at Mol. Part of the German waste was in 1993 transported to the Gorleben waste storage and met with protest and blockades for several hours. (Information from Laka Foundation, 20 February 2003).

Western intelligence source claimed in 1994 that the North-Korean Yongbyon reprocessing plant under construction was based on blueprints of the Eurochemic plant. Especially the fuel decladding and medium-level waste bituminization facilities were claimed to be similar to the unique Mol design. (*WISE News Communique* 411, 6 May 1994)

Mol-Dessel was recently in the news when it became public that 433 barrels of radioactive waste in the storage facility showed signs of degradation. Some of the barrels have rusted and were presently having holes in the surface, other swelled due to the effect of radiation and gas production in the bitumen-waste mixture inside. Another 2368 barrels, which were produced of the same materials, will be closely inspected. (Web site Belgian waste authority NIRAS/ONDRAF at www.niras.be)

actually *give* money to nuclear companies, like Exelon, to build new reactors. Its stated intent is to put the industry in a position to order new reactors by 2005. (See also *WISE/NIRS Nuclear Monitor* 575.5447, "Taxpayer dollars for new U.S. reactors?")

Generation IV is a multi-nation research and development project to deploy new reactors and nuclear waste technology. This program will have a particular focus on generating hydrogen using nuclear power. Other countries currently involved are Argentina, Brazil, Canada, France, Japan, South Korea, South Africa, the UK and Switzerland.

The Nuclear Energy Research Initiative: \$12 million. NERI will also research and promote MOX:

"advanced nuclear fuels for current power plants". This program is national and international in scope and programs have been initiated with both South Korea (5 projects initiated, three pending) and France (5 projects). Projects with Japan, Brazil, Canada, France and South Africa are nearing completion. There is also one project underway with the OECD Nuclear Energy Agency.

Reprocessing and Transmutation: \$63 million. The Advanced Fuel Cycle Initiative (formerly Spent Fuel Pyroprocessing and Transmutation) is the Bush administration's attempt to raise these technologies from the grave. Their ill-fated plot is to develop and deploy new technology which will reduce the volume, heat, radiotoxicity and proliferation threat

from high-level nuclear waste and recover its energy content. In part this will be accomplished by removal of actinides from the irradiated fuel. This project, as part of Generation IV, has an international scope. Transmutation technology has historically been a failure, and reprocessing is one of the dirtiest nuclear processes currently in existence, impacting human health by elevating levels of various cancers including childhood leukemias.

Yucca Mountain: \$591 million. The Administration is asking that the Nuclear Waste Fund provide 161 million dollars, while taxpayers will pay an additional 430 million to allow the Yucca Mountain project to continue. Working under a Phase Development approach, the DOE will

start placing nuclear waste at Yucca Mountain before the entire repository is finished in order to meet the 2010 deadline. Additionally, DOE is attempting to cut costs by skimping on waste container technology and repository wall thickness and placing more reliance on natural barriers. The administration also plans to withdraw permanently lands around Yucca Mountain for sale, settlement, or entry under general land laws. The DOE claims that if the 591 million is not handed over, they will not be able to meet the 2010 deadline for

nuclear waste emplacement to begin. The budget to Nevada for Yucca Mountain scientific oversight responsibilities is entirely cut as is funding provided to local governments for Yucca issues.

NRC budget 2004

According to a Cleveland Plain Dealer article dated 5 February 2003, the NRC is requesting less money for safety inspections while its overall spending budget would rise. The increase would go toward security measures against terror strikes,

review of new reactor designs and other priorities. Ushering in a new generation of nuclear reactors without addressing the problems of the old is the similar thread running through both the DOE and the NRC budget proposals. The paper reports that NRC may yet revise its budget owing to its realization of the full magnitude of the Davis-Besse incident only subsequent to drafting the proposed budget.

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NUCLEAR WASTE DUMPSITE ISSUE IN SOUTH KOREA

While the world's media have focused on North Korea re-starting an old nuclear reactor, and allegations that nuclear waste is being reprocessed to make nuclear weapons, South Korea came a step further to deciding where to site a dump for nuclear waste.

(583.5492) **KFEM** – On 4 February, just after the Lunar New Year's day celebrations, the South Korean government's Ministry of Commerce, Industry and Energy (MOCIE) announced the four candidates for the nuclear waste dumpsite. The candidates are Yonggwang and Gochang in South Jeolla Province, and Ulchin and Youngduk in North Kyungsang Province.

Among these candidates two will be selected, one in each of the above provinces, as the final locations for the nuclear dumpsites in March, 2004. And to our surprise, the government's plan includes a dumpsite for irradiated fuel.

All previous attempts by the government to select a location for the nuclear waste dumpsite ended in failure after strong opposition from the residents and activists. The most recent try was Gulup Island (1). But after about 1 year's strong opposition, the attempt ended in failure as an active fault was found in that area (2). Through these struggles, Korean movement against nuclear waste dumpsite grew into a movement against nuclear power itself. And now Korean activists are

demanding that the government change its energy policy from nuclear into renewable resources.

Korea has 18 nuclear power plants now: 6 in Yonggwang, 4 in Ulchin, 4 in Wolsong near Kyungju city, 4 in Kori near Busan city (total: 15,720MW). These nuclear power plants are producing 40% of the total electric power now. And the government is planning to increase this rate upward to 50% in 2030 by building more nuclear reactors. According to the plan, the sites will then have 12, 10, 8, and 6 reactors operating at the same time.

The announcement on 4 February shows the government's will to increase nuclear power generation. To obtain people's approval, the government has said that temporary storage houses for middle and low-level nuclear waste in each nuclear power plants would be filled up in 2008.

And the government has threatened that if dumpsites are not built now, we would suffer an energy crisis. But the government itself admitted that as we have the technology to decrease the volume of the waste,

dumpsites are not so urgent. The reason the government announced the sites so hurriedly is that they wanted to utilize the political power vacuum before the new President is inaugurated at the end of February.

Korea has so much potential wind power and solar energy. As for solar energy, the amount of solar radiation per unit area is 3 times that of Germany. But the government has no time to develop these energy resources, as it is busy advertising how nuclear power is clean, economical and safe.

More than 10 billion Korean Won (US\$8 million) a year is used in advertising nuclear. So Korean environmental groups are expecting that the fight against the plan to build the nuclear waste dumpsite will be the turning point in changing the energy policy of Korea.

Since the government announced the sites on 4 February, the local people's fight against nuclear has become stronger and stronger. Won-Buddhism, a Korea-oriented religion, joined the fight. Though Won-Buddhism started the fight to preserve their sacred ground

(Yonggwang) from the nuclear waste, now they are saying that they will fight until nuclear is gone from the world because they realized through the fight how nuclear is threatening life and peace.

About 16,000 residents in Yonggwang and Ulchin held a rally on 12 and 13 February to demonstrate against the government's announcement in each site. Especially the residents in Ulchin are highly enraged, as the government had promised not to build a dumpsite in Ulchin in 1994, 1999, and 2000 according to official papers. In case of Youngduk, the government canceled a nuclear waste dumpsite in 1989. The residents in Gochang and Youngduk are preparing a rally in the near future.

While nuclear power has fallen out of fashion in most of the world, it is

still regarded as a clean and safe form of energy in Asia, especially in Korea. For example, Korea Hydro and Nuclear Power Company (KHNPC), a subsidiary of Korea Electric Power Company (KEPCO), is building nuclear power plants with foreign debt guaranteed by the government. (Of the US\$60 billion of foreign debt that brought about the 1997 IMF crisis in South Korea, US\$20 billion was for KEPCO.)

KEPCO has encouraged Koreans to consume as much electric power as 5,600kwh per capita. According to their plan we "have to" spend 8,500kwh per capita in 2015.

They even hope to export nuclear power plants to Vietnam, Uzbekistan, and Romania. In short, South Korea is playing a role as a bridgehead for world multinational nuclear capital

to Asia, and the plan to build a nuclear waste dumpsite is related to this.

[Translated from Korean by Yongchang Jang, then edited by WISE Amsterdam]

Notes:

- (1) Also known as Kurop – see *WISE News Communiqué* 432.4263, "Kurop: Condemnation of an island"
- (2) See *WISE News Communiqué* 445.4414, "Disposal at Kurop island axed"

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THE COLUMBIA DISASTER AND NASA'S NUKES IN SPACE PROGRAM

The Columbia shuttle disaster came just as the U.S. National Aeronautics and Space Administration was pushing to greatly broaden its program to use nuclear power in space. This includes the development of a nuclear-propelled rocket – a project which NASA spent billions of dollars on in the 1950s and 60s until it was cancelled because of concern of such a nuclear rocket crashing to Earth.

(583.5493) **Karl Grossman** – Just think if it was a nuclear rocket that came falling down in pieces over Texas or elsewhere on Earth.

The new space nuclear power scheme, called Project Prometheus, is a broadening of the NASA Nuclear Systems Initiative—on which US\$1 billion is to be spent over five years—that began last year.

However, as the *Los Angeles Times* reported last month, NASA Administrator Sean O'Keefe is expecting a "very significant" increase in that funding as the Nuclear Systems Initiative becomes Project Prometheus.

In addition to a nuclear-powered rocket, NASA is planning additional plutonium-energized space probe and to put atomic power to other space

uses including the launching of planetary rovers with nuclear systems.

Indeed, this May and June NASA is planning to launch two rockets from Florida carrying rovers to be landed on Mars equipped with heaters powered by plutonium. The Global Network Against Weapons & Nuclear Power In Space (www.space4peace.org) has been conducting demonstrations to protest these launches.

NASA's "Environmental Impact Statement for the Mars Exploration Rover-2003 Project" says that "the overall chance of an accident occurring" for each launch "is about 1 in 30" and "the overall chance of any accident that releases radioactive materials to the environment is about 1 in 230." People "offsite in the downwind direction...could inhale

small quantities of radionuclides," says NASA's statement. An area of up to 62 miles (100 kilometers) from the launch site could be impacted, says NASA.

"These and other NASA space shots involving materials must be cancelled in the wake of the Columbia disaster and safe space energy systems be used instead," declares Bruce Gagnon, coordinator of the Global Network.

The Nuclear Systems Initiative was described as a "a new element" in NASA's "space science program: by O'Keefe in testimony before the House of Representatives Committee on Science last February. Three months earlier, O'Keefe – secretary of Navy under President George H. Bush – was named NASA chief by President George W. Bush.

"Nuclear propulsion greatly increases mission flexibility, enabling new science missions, more in-depth investigations, and greater flexibility in reaching and exploring distant objects," he told the committee.

In the weeks before the Columbia disaster, O'Keefe was stepping up the promotion of nukes in space. "We're talking about doing something on a very aggressive schedule to not only develop the capabilities for nuclear propulsion and power generation but

RADIOACTIVE DEBRIS?

Conflicting reports have circulated on whether or not there was nuclear material on board Columbia. On 2 February, Sheriff Thomas Kerss from Nacogdoches, Texas told National Public Radio, "There was radioactive material on board" and that retrieval operations would be testing debris for radioactivity.

Dale Vodak, environmental investigator for the Texas Commission on Environmental Quality, was quoted in the 7 February *Orlando Sentinel* as saying that americium-242, "used in smoke detectors" had been found. In fact, the isotope used in smoke detectors is americium-241.

Americium-242m, a form of americium-242, however, is under investigation as a possible nuclear fuel for use in space programs, since its critical mass (the minimum amount needed for nuclear fission) is around one percent of that of uranium. Research into this has been carried out at Israel's Ben-Gurion University.

NASA denied that there was nuclear material on board Columbia. However, on February 3rd – just two days after the disaster – NASA presented its budget for its Project Prometheus space nuclear program: a whopping US\$3 billion over five years.

www.space4peace.org; Karl Grossman; *Space Daily*, 6 January 2001

to have a mission using the new technology within this decade," he told the *Los Angeles Times* in its story published on 17 January.

The Nuclear Systems Initiative, or, as it is now to be called, Project Prometheus, would be pushed as scientists in the European Space Agency (ESA, the European counterpart of NASA) and in space industry and at NASA itself have made breakthroughs in developing safer ways of propelling rockets and energizing space probes and planetary landers.

This includes solar electric propulsion and the use of "solar sails" and other solar technologies that stress the generation of electricity with new high-efficiency solar cells.

Last month, ESA got set to launch a solar-powered space probe called Rosetta with all its on-board electricity coming from solar cells with record-high 25% efficiency. It was to fly beyond Jupiter to rendezvous with a comet called Wirtanen.

Problems with an ESA rocket caused the mission to be scrubbed. Rosetta is to be, notes ESA, "the first space mission to journey beyond the main asteroid belt and rely solely on solar cells for power generation, rather than traditional radioisotope thermal generators" (the plutonium systems NASA favors for its space probes).

It would gather sunlight way out in space. "After a 5.3 billion km space odyssey, Rosetta will make first contact with Wirtanen about 675 million km from the Sun," explained ESA. "At this distance, sunlight is 20 times weaker than on Earth."

NASA has a division – its Photo-voltaics and Space Environment Branch headquartered at the John Glenn Research Center in Cleveland – which, like ESA, has been working on space solar energy development. There is no "edge" or limit to solar power, says a scientist at the branch,

Dr. Geoffrey A. Landis, on its website. "In the long term, solar arrays won't have to rely on the Sun. We're investigating the concept of using lasers to beam photons to solar arrays. If you make a powerful-enough laser and can aim the beam, there really isn't any edge of sunshine."

Solar energy technologies are being used now to propel spacecraft. NASA's Deep Space 1 probe, launched in 1998, is the first space probe to be propelled with solar electric propulsion, a system through which electricity collected by panels is concentrated and used to accelerate the movement of propellant out a thrust chamber.

There are "solar sails" utilizing ionized particles emitted by the Sun which constitute a force in space. NASA's Jet Propulsion Laboratory is considering a launch at the end of the decade of a space probe to Pluto using either solar sails or solar electric propulsion.

A space device with solar sails built in Russia for the International Planetary Society was launched in 2001.

In contrast, NASA's renewed emphasis on nuclear power in space "is not only dangerous but politically unwise," says Dr. Michio Kaku, professor of theoretical physics at the City University of New York and author of best-selling books including "Hyperspace."

"The only thing that can kill the U.S. space program is a nuclear disaster. The American people will not tolerate a Chernobyl in the sky. That would doom the space program."

"NASA hasn't learned its lesson from its history involving space nuclear power," says Kaku, "and a hallmark of science is that you learn from previous mistakes."

"NASA doggedly pursues its fantasy of nuclear power in space. We have to save NASA from itself." He cites

"alternatives" to space nuclear power. "Some of these alternatives may delay the space program a bit. But the planets are not going to go away. What's the rush? I'd rather explore the universe slower than not at all if there is a nuclear disaster."

Yet despite the costs, dangers and the advances in solar energy technologies and other safe forms of power for use in space, NASA would stress nuclear power.

In fact, the situation is not so different from how the Bush administration has been pushing to "revive" nuclear power on Earth despite the availability today of safe, clean, economic, renewable energy technologies. And like terrestrial atomic power, space nuclear power has a problematic past.

Early U.S. space satellites were powered by plutonium. The first nuclear satellite was Transit 4A, a navigational satellite launched on June 29, 1961. It was a time when space and nuclear power were seen by some as coupled.

Space exploration "in large measure depends upon the common destiny of space and the atom," former U.S. Senator Albert Gore – the father of the former U.S. vice president – declared in a 1962 Senate speech.

Importantly, in Gore's home state is Oak Ridge National Laboratory. Oak Ridge and the other U.S. nuclear laboratories then and to this day have promoted the development of space atomic power as a means of expanding their activities, to bring in more work.

Gore, a member of the Joint Congressional Committee on Atomic Energy, advocated nuclear-powered rockets and atomic power "for a wide variety of miscellaneous functions in space....Nuclear energy is essential for leadership in space."

Along with the national nuclear laboratories—set up during the World War II atom bomb-building

Manhattan Project and thereafter run by the Atomic Energy Commission and now the Department of Energy—the corporations involved in building space nuclear systems have also been active in promoting their use. The Transit 4A's plutonium system was manufactured by General Electric.

Then there was a serious accident involving a plutonium-energized satellite. On April 24, 1964, the GE-built Transit 5BN with a SNAP-9A (SNAP for Systems Nuclear Auxiliary Power) system on-board failed to achieve orbit and fell from the sky, disintegrating as it burned in the atmosphere.

The ill-fated shuttle Challenger was to launch a plutonium-fueled space probe in its next planned mission in 1986.

The 2.1 pounds of Plutonium-238 (an isotope of plutonium 280 times "hotter" with radioactivity than the Plutonium-239 which is used in atomic and hydrogen bombs) in the SNAP-9A dispersed widely over the Earth.

A study titled "Emergency Preparedness for Nuclear-Powered Satellites" done by a grouping of European health and radiation protection agencies later reported that "a worldwide soil sampling program carried out in 1970 showed SNAP-9A debris present at all continents and at all latitudes."

Long connecting the SNAP-9A accident and an increase of lung cancer on Earth has been Dr. John Gofman, professor emeritus of medical physics at the University of California at Berkeley, an M.D. and Ph.D. who was involved in isolating plutonium for the Manhattan Project and co-discovered several radioisotopes.

The SNAP-9A accident caused NASA to become a pioneer in developing

solar photovoltaic energy technology. And in recent decades, all U.S. satellites have been solar-powered. So is the International Space Station.

But NASA continued to use plutonium-powered systems for a series of space probe missions claiming solar power could not be effectively gathered by space probes beyond the orbit of Mars.

The ill-fated shuttle Challenger was to launch a plutonium-fueled space probe in its next planned mission in 1986. The Ulysses space probe, with 24.2 pounds of plutonium fuel, was to be sent off from Challenger once it achieved orbit for a survey of the Sun.

The most recent NASA nuclear space probe mission was called Cassini. It was launched in 1997 with more plutonium fuel – 72.3 pounds – than on any previous space device. NASA conceded the dangers of a Cassini accident in its "Final Environmental Impact Statement for the Cassini Mission."

Although its destination was Saturn, Cassini did not have enough power to get it directly there, so NASA devised a "flyby" or "slingshot maneuver" using the Earth. Cassini was to be sent from space hurtling back at Earth and then, just several hundred miles high, whip around Earth to pick up the additional velocity so it could make it to Saturn.

The NASA EIS for Cassini said that on this "flyby" if an "inadvertent reentry occurred" and Cassini fell back to Earth, it would break up in the Earth's 75-mile high atmosphere (it had no heat shield) and "5 billion of the...world population...could receive 99 percent or more of the radiation exposure" from the plutonium dust that would rain down.

In areas seriously contaminated, NASA said actions would include: "Remove and dispose all vegetation, Remove and dispose topsoil. Relocate animals...Ban future agricultural

land uses." And for urban environments, "Demolish some or all structures. Relocate affected population permanently."

Dr. Gofman estimated the toll from cancer from such a Cassini accident as 950,000 people dead.

Although Cassini did get past the Earth successfully on its 1999 "flyby," six weeks later NASA's Mars Climate Observer, on a pass over Mars, crashed into the Martian atmosphere and disintegrated.

The mishap was attributed by NASA to human error – one of its teams calculated the planned altitude of the spacecraft in feet, the other in meters, and it came in too low.

The U.S. nuclear-propelled rocket program began at Los Alamos National Laboratory in the 1950s with building of the Kiwi reactor for what became known as the NERVA – for Nuclear Engine for Rocket Vehicle Application – program.

Projects Pluto, Rover, Poodle and Orion to build nuclear-powered rockets followed.

Westinghouse was a major contractor in these nuclear rocket efforts. A former Westinghouse president, John W. Simpson, acknowledged in his 1994 book on the history of the company ("Nuclear Power from Underseas to Outer Space") how to get the government contracts, "believe me, we pulled out all the stops – not only technical effort but also marketing and political savvy."

Ground tests of nuclear rocket components were conducted. But no nuclear-propelled rocket ever flew and because of the catastrophe that could result if a nuclear-powered rocket crashed to Earth, the government ended the program.

Now in 2003 we would rocket back to the past.

Gagnon, coordinator of the Global Network Against Weapons and

Nuclear Power in Space, warns that the process of manufacturing space nuclear power systems has had human health costs from the process of manufacturing and building more "will lead to significant numbers of workers and communities being contaminated."

He says: "Serious questions need to be asked: Where will they test the nuclear rocket? How much will it cost? What would be the impacts of a launch accident? These nuclear-ization of space plans are getting dangerous and out of control."

The commitment of huge amounts of money to the Nuclear Systems Initiative, now Project Prometheus, is unconscionable. Did the people of Earth have a voice in this?

Also, Gagnon sees a military connection, describing the use of nuclear power in space as "the foot in the door, the Trojan horse, for the militarization of space."

Space weapons sought by the military – space-based lasers, hypervelocity guns and particle beams – would require large amounts of power which the military sees as coming from on-board nuclear power systems, thus the close cooperation between the Pentagon and NASA in space nuclear efforts.

The Global Network led protests at the 11th Annual Symposium on Space Nuclear Power and Propulsion in Albuquerque, New Mexico.

The gathering, organized by the University of New Mexico's Institute for Nuclear Space Power Studies, drew NASA, nuclear industry, academic, government and military space nuclear proponents. Said Gagnon from New Mexico: "We're not saying there shouldn't be any space program. It's a question of what kind of seed do we carry with

us out into space."

"Why on Earth," asks Alice Slater, president of the New York-based Global Resource Action Center for the Environment and a Global Network board member, "would any sane person propose to take nuclear poisons to a whole new level?"

"Nuclear power whether in space or on Earth is a risky business," says Sally Light, long-time executive director of the anti-nuclear Nevada Desert Experience and also a Global Board member, "Why is the U.S. blindly plunging ahead with such a potentially disastrous and outmoded concept? We should use solar-powered technologies as they are clean, safe and feasible."

The commitment of huge amounts of money to the Nuclear Systems Initiative, now Project Prometheus, "is unconscionable. Did the people of Earth have a voice in this?"

"One of the basic principles of democracy is that those affected have a determinative role in the decision-making process. We in the U.S. and people worldwide are faced with a dangerous, high-risk situation being forced on us and on our descendents."

[Karl Grossman is the author of "The Wrong Stuff: The Space Program's Nuclear Threat To Our Planet" (Common Courage Press) and narrator and writer of "Nukes In Space" video documentaries available from EnviroVideo at www.envirovideo.com].

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ECRR REPORT CHALLENGES ENTRENCHED RADIATION ASSUMPTIONS

A recently-released report claims that the radiation dose model of the International Commission on Radiological Protection (ICRP) is inadequate for internal irradiation, and proposes a new model. The report made headlines with its predictions of over 61 million deaths from cancer attributable to nuclear activities since 1945.

(583.5493) NIRS – The European Committee on Radiation Risk (ECRR) is an independent committee formed in 1997 after a meeting at the European Parliament to review the controversial issue of low-level radiation.

Shortly after it was set up, a meeting of the European Parliament's Scientific and Technological Options Assessment unit (STOA) considered evidence that low-level exposure to man-made radiation caused ill health and that models used by ICRP failed to predict these effects.

The ECRR was asked to come up with an alternative analysis.

The resulting report, *2003 Recommendations of the European Committee on Radiation Risk*, addresses not only the science behind the low-dose debate, but also the ethical basis for allowable radiation exposures.

The intellectual breadth and depth, and scientific inclusiveness of this report are a refreshing change from current radiation establishment tactics.

If society is ever to have a proper debate on the effects of low-doses and dose rates of ionizing radiation, it must challenge the very basis of radiation dose and risk assessment. This report does.

For its models, the ICRP uses ethical justifications which are based on overall societal benefit rather than individual benefit. This does not account for rights-based philosophies which are part of the UN declaration

of human rights. Since any dose of radiation has a small probability of fatal harm, the ECRR argues, the "collective dose" should be employed for all practices and time scales dealing with avoidable radiation exposure.

Among inadequacies in the ICRP risk model, the ICRP makes assumptions that are based on a series of value judgments. Often the risk model runs counter to actual and epidemiological study results. Additionally, population dose is not accurate for each individual since it averages the effects of many people who are genetically variable.

Current ICRP risk models do not differentiate enough between radiation delivered externally and that delivered internally; a difference the report likens to "a man warming himself in front of a fire and a man eating a red hot coal."

Further, the ICRP risk model takes a high dose to a single cell and averages it over a larger tissue mass. The ECRR accepts the ICRP's "linear no threshold" model for external irradiation.

However, because of the complex mechanism of cells, the ECRR says that the current linear damage model is not suitable for internal irradiation. The linear model must, according to the committee, be superseded in favor of relationships that show much higher effects at low doses.

To help correct for these shortcomings, ECRR has developed mathematical terms that extend the

risk model of the ICRP. They include two new weighting factors in the calculation of effective dose (for internal exposures) which address ionization density in time and space at the cellular level. Ionization densities vary by radiation type (alpha, beta or gamma).

The committee also makes weighting adjustments for certain types of radionuclides which undergo damaging transmutation; and they make enhancement weightings based on biological and biophysical aspects of certain exposures.

ECRR derives these weighting factors from studies showing harm from low-dose exposures.

The committee recommends:

- the total maximum permissible dose to members of the public from all human nuclear practices be not more than 0.1mSv and 5mSv for workers
- all new nuclear practices must be justified by considering the rights of all individuals.
- total consequences of radioactive discharge must be assessed for both direct and indirect effects on all living systems.
- radiation exposures must be kept as low as reasonably achievable using best available technology.

For more information, visit the committee website at www.euradcom.org.

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NEW WISE AMSTERDAM WEB SITE

WISE Amsterdam has revamped its web site (www.antenna.nl/wise), with a new front page and new features on key nuclear issues. In order to preserve the site's role as an aid to research, back articles from the *WISE News Communiqué* and the *Nuclear Monitor* remain at the same addresses. The NIRS website (www.nirs.org) currently is being redesigned and reorganized as well, and should be unveiled in just a few weeks.

The new design of the web site reflects the importance of information and networking for WISE Amsterdam. Ever since the WISE network was founded 25 years ago, its function has been to distribute information between anti-nuclear campaign groups. The arrival of the Internet greatly facilitated this, and WISE Amsterdam has made use of the Internet since the late 1980's (back then, the World Wide Web had not yet been invented, but e-mail and newsgroups enabled us to send texts around the world).

Since then, an enormous amount of information has become accessible via the Internet. Amidst this ever-increasing quantity of information, WISE Amsterdam has continued to focus on quality, checking all published articles and mentioning sources so that others can carry out their own checks.

Another issue is easy access to information. In the new WISE Amsterdam web site, the front page has been redesigned so that frequently accessed information is easier to find. Our on-site search engine is now prominently displayed at the very top of the page, making it quicker for people to search on a particular subject.

Under this search box, there is a row of photos which form a new "feature bar". Clicking on one of these photos brings up a pop-up window with a short text on a particular theme. The themes include answers to common questions such as why we are against nuclear power and reprocessing, but also areas that we feel deserve more attention, such as the issue of nukes in Asia.

A navigational bar on the left contains links to the main areas of interest in the web site. As well as the links section and back issues of the newsletter, there are new pages such as a list of the latest updates on the site. An archive area gathers together material from past campaigns, much of which is still relevant.

Feedback on the new web site from readers is particularly welcomed. You can contact us at wiseamster@antenna.nl or use the feedback form ("Contact us") on the new web site.

IN BRIEF

German teenage activist to be accused of terrorism? An appeal court case is ongoing against the four Robin Wood activists who chained themselves to a concrete block in March 2001, causing 12 hours' delay to a Castor nuclear waste train, which was forced to go backwards (see *WISE News Communiqué* 546,5262, "Gorleben: trainstopping"). Robin Wood's lawyer has complained that one of the two lay judges works for nuclear utility HEW and so has a conflict of interest. The lead judge was surprised by this, but nevertheless rejected the complaint. He further added that one of the four defendants, a teenage girl, has the right to silence when called as a witness in case her answers cause her to be accused of setting up or belonging to a terrorist organization.
Robin Wood press release, 14 February 2003

Nuclear boss's sentence confirmed. In France, on the other hand, an appeal

court has confirmed the one-month suspended prison sentence handed out to Joël Bultel, former director of the Tricastin nuclear power station, for the injury caused to Frédéric Moreau, an employee at the plant. In 1999, Moreau, a radiation safety worker, received a radiation dose of 340 millisieverts when his foreman sent him into a forbidden "red zone" under the reactor.

While confirming Bultel's sentence, the court greatly reduced the fine for Electricité de France from 500,000 francs (then US\$67,500) to 1,350 Euros (now US\$1,450).

AFP, 19 February 2003; WISE News Communiqué 507 "In Brief" and 552, "In Brief".

Nuclear Enron-ism? A federal grand jury is investigating whether Duke Power committed criminal acts in accounting. An audit had concluded that Duke had under-reported US\$124 million in

profits. As a monopoly utility, Duke is allowed a set profit margin – if it exceeds this, regulators can lower rates. Yet, for example, when Duke received insurance rebates on nuclear power stations, it credited them to "unregulated accounts", which are not considered in setting rates, so enabling it to avoid a cut in rates.

This is only a criminal act if it was carried out deliberately to deceive regulators. Duke denies this, and has since offered to settle the allegations by offering credits to North and South Carolina. The utility has also agreed to restore US\$50 million to its nuclear insurance reserve fund – the source of many accounting irregularities.
The Charlotte Observer, 18 February 2003

Terrorist attack on Sellafield could cause up to 3.6 million deaths. Three reports that were commissioned by

Greenpeace UK conclude that a terror attack with a hijacked plane could have severe consequences. A first report by independent consultant Dr. John Large concludes that UK's nuclear plants are not prepared for an airborne attack. A second report was made by an aviation expert who states that it would only take four minutes for an airplane to divert from its regular flight path to attack the Sellafield complex. Dr. Frank Barnaby concludes in a third report that 25 times as much radioactivity as was released by the Chernobyl disaster would be likely to be released in case of an attack on high-level waste tanks at Sellafield. That could cause 1.1 million fatal cancers but in a worst case scenario even up to 3.6 million deaths.

The three reports had been completed by the end of 2001 but still haven't been released by Greenpeace. According to Greenpeace they are still in a draft form, but the UK press has suggested that the results of the studies were so alarming that Greenpeace was unwilling to

publish it. In the studies it was concluded that detailed information on Sellafield and other nuclear installations could easily be found in publicly available documents.

WISE has reported on the John Large study in the *WISE/NIRS Nuclear Monitor* 573.5435: "Protecting nuclear installations by "bluff and cover". John Large himself made a presentation on his study at the "Rethinking Nuclear Energy and Democracy after 09/11 2001" conference in April 2002 in Basle (Switzerland).
WISE/NIRS Nuclear Monitor 573, 13 September 2001; The Independent, 16 February 2003

European Union denies it wants to finance "another Chernobyl". The EU delegation in Russia has denied that it is involved in discussions for providing funds for the completion of the Chernobyl type Kursk-5 reactor in Russia. The Kursk-5 reactor (and 5 other VVER

type reactors) was listed in an EU document on the extension of Euratom loans as a possible funding project. The Russian EU delegation however denied on 7 February that discussions are taking place. According to the EU, its terms and conditions for funding would be unacceptable to Russia, according to Rosenergoatom, the Russian nuclear electricity company. But the EU does not exclude future negotiations if Russia accepts EU conditions for funding.
WISE/NIRS Nuclear Monitor 582, 31 January 2003; Delegation of the European Union in Russia press release, 7 February 2003

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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.

The *Nuclear Monitor* publishes international information in English 20 times a year. A Spanish translation of this newsletter is available on the WISE Amsterdam website (www.antenna.nl/wise/esp). A Russian version is published by WISE Russia and a Ukrainian version is published by WISE Ukraine (available at www.nirs.org). The *Nuclear Monitor* can be obtained both on paper and in an email version (pdf format). Back issues are available through the WISE Amsterdam homepage: www.antenna.nl/wise and at www.nirs.org.

Receiving the Nuclear Monitor

US and Canadian readers should contact NIRS for details of how to receive the *Nuclear Monitor* (address see page 11). Subscriptions are \$35/yr for individuals and \$250/year for institutions. Others receive the *Nuclear Monitor* through WISE Amsterdam.

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