

ANUMUKTI

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Shoulders

*A man crosses the street in rain,
stepping gently, looking two times north and south,
because his son is asleep on his shoulder.*

*No car must splash him.
No car drive too near to hit shadow.*

*This man carries the world's sensitive cargo
but he's not marked
Nowhere does his jacket say FRAGILE,
HANDLE WITH CARE.*

*His car fills up with breathing.
He hears the hum of a boy's dream
deep inside him.*

*were not joining to be able
to live in this world
if we're not willing to do what he's doing
with one another.*

*The road will only be wide.
The rain will never stop falling.*

*Naomi Shihab Nye
Atomic Ghost: Poets Respond to the Nuclear Age.*

Indian Courts Need to be Educated on Nuclear Issues

The rejection by a division bench of the Bombay High Court of two writ petitions demanding public information on violation of safety regulations at various nuclear installations again highlights the fact that it is necessary to educate the courts before rushing in with petitions demanding justice.

The petitioners in the present case relied on an interview published in Times of India of former chairman of the Atomic Energy Regulatory Board, A. Gopalakrishnan who had referred to 130 violations in nuclear installations in the country.

The affidavit filed by the authorities, submitted that records of the DAE were privileged communications and were always classified as secret. Additional Solicitor General R A Dada also produced a memorandum constituting a review committee to investigate the present regulatory procedure. He said that the committee will submit its report in four months.

Chief justice M B Shah and Mr. Justice F I Rebello held that as a competent body had already been constituted to look into the matter, the court need not intervene. The petitioners had urged that DAE should disclose the report listing the safety violations.

One of the petitions submitted, "Various reports in the media have highlighted that safety measures at the installations, research facilities and power plants were not up to the mark, resulting in serious defects and accidents that endanger lives of employees, innocent citizens and all life forms." It further urged that citizens had a fundamental right to know about their safety. Counsel for the petitioners M A Rane said the claim to secrecy

From the Editor's

Devaluation of Public Morals

There was a time when our leaders were people whose words, though not law, did carry weight. You could believe them. Honesty and probity in public life were considered virtues. Unfortunately, nowadays an honest public servant is a rarity. The very term "public servant" is an anachronism.

The most shocking revelation in recent days have not been the antics of Laloo Yadav but those of Inder Gujaral when he declared that the country possessed a stock of chemical weapons which would now be dismantled in view of our commitments under the chemical weapon's convention. It has been our oft-stated policy that chemical weapons shall be no part of our armoury since they are weapons of mass terror. As the admission by Mr. Gujaral clearly indicates, we have been saying one thing while doing the opposite and clandestinely making and stockpiling these heinous weapons. The fact that other nations (read Pakistan) have been doing the same is no justification for our own indefensible moral lapse.

Not only has the revelation not shocked the press, but it has instead been greeted by relief that Indian leaders despite all their preoccupation with sticking to their seats, do sometimes think about the security of the country! A hope has also been expressed in some sections of the press that similar will be our situation with respect to nuclear weapons and despite all our pronouncements we have been secretly building a stockpile of these as well. Nothing could be more bizarre!

If we want to be a nuclear weapon's power, let us by all means democratically decide to do so, but then do so boldly and openly so that the costs of so doing are well understood by all. To do so clandestinely is the worst of all possible worlds. Firstly, the so-called benefits remain hidden. Secondly, the horrendous costs not only in monetary terms but more importantly in people's health also remain hidden. An uncaring elite will just not listen to the people who have to pay the price for these delusions of big power grandeur. The worst consequence of back-room decision making is that the people's cynicism regarding their leaders, gets deepened—a sure recipe for dictatorship.

amounted to denial of the citizen's right to know matters which affected their lives.

This is not the first time that courts in India have given unfavourable verdicts on nuclear issues. The same thing happened in the Chernobyl Irish butter case in 1987, While the Supreme Court's verdict in the Kaiga site selection case was favourable, it did not force the atomic establishment to change its course. Therefore, there is a need that these verdicts be prop-

erly analysed to find out why judges in India are so hesitant to discipline errant nucleocrats. Is it the mystique attached to the bomb and all matters nuclear that has made the judges so diffident? They don't seem to have the same diffidence towards other technical personnel, dam building engineers for example. Education of judges and bar associations on nuclear issues ought to be a high priority for the antinukes in India.

Based on a report in Times of India 2.2. '92

Environmental Racism: A Landmark knoldgement

Eight years ago, a group of international nuclear promoters got together and hatched a newscheme. One thing admirable about these guys, they are certainly industrious and persistent. At the time the state of Louisiana in the deep South of USA had a staunch pro-nuclear personality J. Benner Johnson as its senator. Having been in the senate for a long time Johnson had become extremely powerful. He was the head of the Senate energy committee which decided on legislation on energy related topics. The promoters were Eurenco—the European uranium enrichment consortium. Duke Power, Northern States Power Fluor Daniel and to a small extent Louisiana Power and Light. The first thing they did was to form subsidiaries which together floated a company by the name of Louisiana Energy Services with the express purpose of building and operating a uranium enrichment plant at a site in Claiborne Parish near Homer in Northern Louisiana. The main purpose of doing things in this roundabout way was to protect the promoters from any financial liability due to environmental damage caused by the project.

The site chosen was very close to two poor black communities. This too is a world wide phenomena. Any facility with health impacts gets built in poor communities who are then told how this wonderful new project is going to make an enormous difference to their benighted lives. All this is true, the project does make a great difference though not in the way it had been previously projected but in an entirely negative manner. Unfortunately for the promoters, this game has been going on for too long. Now a days, the poor instead of being properly grateful for this uncalled for generosity are downright suspicious. They organise and fight. The following is an account of a mulirai lai coalition, Citizens Against Nuclear Trash (CANT) of communities in Homer who got together and beat powerful nuclear interest and in the process have opened a new legal pathway for other similarly placed communities to follow.

The nearly eight-year struggle against the proposed uranium enrichment plant of the US Louisiana Energy Services (LES) is at an end. Light years of hearings, demonstrations, organising, meetings, and ongoing and unusual solidarity and support among the multiracial members of Citizens Against Nuclear Trash (CANT) in northern Louisiana have paid off

On May 2 nuclear Regulatory Commissions Atomic Safety and Licensing Board (ASLB) released its final decision on the proposed LES project. The unheard-of verdict; license denied. The ASLB reached its precedent-setting decision on the final, and critical, environmental justice contention. Earlier, the ASLB had ruled in favour of CANT that the LES consortium was not financially qualified to build and operate the plant, and was essentially a shell corporation apparently intended primarily to avoid

potential liability for its parent companies. And the ASLB had ruled that LES had underestimated its likely decommissioning costs by about 50%—enough that its already dubious profit projections were shaken. But the final decision denies outright LES a construction permit/operating licence. Unless LES can successfully appeal this decision to the NRC commissioners, which appears highly unlikely, it is all over.

LES will become the first entity in the US to which the NRC ever has denied a license, for any reason. CANT and its attorneys, Washington lawyer Diane Curran and Nathalie Walker of the Sierra Club Legal Defense Fund of New Orleans, argued that the LES project was a singular example of environmental racism, and that the NRC had not done its job to ensure that the proposed plant did not have a disproportionate impact on the local poor African-American popula-

tion. Dr. Robert Bullard, a professor at Clark Atlanta University and a nationally recognised expert on environmental justice and facility siting issues, testified on behalf of CANT. Bullard argued that the LES siting process clearly zeroed in on minority communities, eventually targeting a community that is nearly 98% African-American, that the citizens of the forest Grove and Center Springs communities closest to the plant would suffer a disproportionate and negative impact if the plant were built, and that the LES violated its own site selection criteria in choosing the eventual site, which itself was evidence of environmental racism. The ASLB agreed with all of these contentions.

The ramifications of this decision may be impossible to overstate. This is the first decision, issued by any judicial body in the US, that directly addresses the environmental justice issue, and does so in a framework that

makes clear the responsibilities of corporations and federal agencies. In addition, the decision spells out the responsibilities of federal agencies in complying with President Clinton's 1994 executive order on environmental justice the first such detailing anywhere. By denying the LES a license, the Board underscored its commitment

upcoming court cases. Seemingly aware of the historic nature of the decision, the ASLB stated in unusually clear terms exactly what is required of the NRC, and perhaps all federal agencies in reviewing license applications for hazardous facilities. In doing so, the ASLB also provided a clear, concise explanation of how environmental

"Racial discrimination in the facility site selection process cannot be uncovered with only a cursory review of the description of that process appearing in an applicant's environmental report. If it were so easily detected, racial discrimination would not be such a persistent and enduring problem in American society. Racial discrimination is rarely if ever, admitted. Indeed, it is often rationalized under some other seemingly racially neutral guises, making it difficult to ferret out. Moreover, direct evidence of racial discrimination is seldom found....In other words, the Staff must lift some rocks and look under them."

tal works, how it is not overt, how it is never admitted, but how it must be ferreted out because that is what the law requires. In their own words, "A thorough investigation must be performed — In other words, the Staff must lift some rocks and look under them"

to environmental justice and laid the groundwork for all future nuclear siting decisions. Every NRC-licensed facility will have to comply with this decision. Moreover, as the first judicial decision on these issues, the opinion undoubtedly will be cited in other

to imagine what options now lie open for LES. The consortium can, of course, appeal the decision. The ASLB denied the license "without prejudice", meaning that the LES can attempt to amend its license application to attempt to prove that its

It is difficult

siting policy was not racist. The NRC staff would then have to conduct a "thorough investigation" to validate that. But the ASLB made clear that it believes the process was based on racial issues: The "statistical evidence very strongly suggests that racial considerations played a part in the site selection process. It does not, of course, rule out all possibility that race played no part in the selection process. Nonetheless, the Intervenor's (CANT) statistical evidence clearly indicates that the probability of this being the case is unlikely..." It would seem then that the LES's only opportunity would be to start its site selection process anew — a process that could not possibly lead to the proposed site in Claiborne Parish — and would bring the consortium, eight years later and at least US\$40 million poorer, back to square one. The ASLB decision is essential reading for anyone involved in nuclear or hazardous siting issues. It is available at NIRS' web site (www.nirs.org) or by mail from NIRS at the address given below.

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Bulgarians Show More Sense Than Deve Gouda and Gujarat

Nuclear energy is a costly and economically unsound proposition. However, nucleocrats with their glib talk and hiding behind an aura of scientific respectability are usually able to sweet talk their scientifically ignorant political masters. The fact that nuclear projects involve billions and can provide large commissions for people with good connections to power, also helps. One of the last acts of Shri Deve Gouda as Prime Minister was to go to Russia with Mr Gujarat in tow and sign the deal for two 1000 Megawatt VVFR type reactors. The reason given for this act of folly and reported in most newspapers was that Russia was willing to provide "generous" terms of credit. It is a pity that none in the Prime Minister's large entourage questioned the motives of their Russian hosts in providing this generosity. For a country which is out with a begging bowl even larger than India's, to be offering credit should cause alarm bells to ring. The new government in Bulgaria has shown a greater sense of responsibility, commissioned a study by independent and honest experts who came to the inescapable conclusion that even with generous Russian credits, nuclear power plants in this day and age are if not anything else, a prescription for economic disaster.

"Too Cheap To Meter" had once been the motto on the nuclear flag. New scholarship (see Arjun Makhijani's report "The Nuclear Power Deception") has shown that while nucleocrats were shouting this mantra from rooftops their own studies were showing unequivocally that nuclear power was

likely to be extremely costly. But helped by massive government subsidies nuclear power was able to capture market share in some countries. But, the inherently costly nature of nuclear power was slowly discovered all over the world despite the subsidies and misinformation. Instead of being too cheap to meter it turned out to be too costly to continue. The imminent deregulation of the electricity supply in the US is the proverbial last straw on the nuclear camel's back. By allowing any electric utility to sell anywhere in the country at whatever rates the market would bear, this measure encourages more efficient suppliers at least in the short term. Utilities having nuclear power plants are finding that in some cases it might be cheaper to just right off the losses and build a new and more efficient gas based co-generation plant. It is expected that within the next year or two more than 10 nuclear power plants shall face retirement in the US. The following two news-items are just a precursor of the times

of the times

■ Belene Nuclear Project Cancelled

The Belene nuclear power plant in Bulgaria is dead. This unfinished nuclear power plant was killed by a governmental decision on Mas 21 which stated that the plant was technically unsound and economically unviable.

The Russian-designed Belene plant had been the object of desire of several Western nuclear construction companies, including Westinghouse, which were hoping they could make profits on upgrading and completing the reactor with Western money. Construction was stopped in 1990 due to popular protest. Belene, the second nuclear power project in Bulgaria, had been on the anvil for many years. The reactors that were to be built in Belene are the same VVER—1000s that have been proposed for Koodankulam. Experience with these reactors at Kozloduy did not enthruse the new government. Their capacity factors have been just 34%.

The government stated that Bulgaria cannot continue developing nuclear energy with the existing generation of reactors. "The society has to shake off the years-long illusion that nuclear energy is cost-effective and the nuclear power plants are safe." This was said with special reference to Kozloduy, Bulgaria's first nuclear power station. "The inclusion of all present and future expenses for the storage of the highly radioactive waste

entails reassessment of all upgrade programmes. The work on the old reactors can be extended only if the safety upgrades are acceptable from an economic point of view."

An expert council made up of scientists, representatives of governmental energy-related institutions, energy companies and others reviewed a study done by the Russian institute "Atom-energoproekt" that was pushing for the completion of Belene and offering a credit worth US\$ 400 million. The expert council's decisions refuted the study and decided that the completion of Unit I of Belene is economically unjustifiable. Mentioned as a first priority in the expert council's report is energy efficiency. It stated that a consistent national energy-efficiency program in the course of 20 years can save over 1500 MW and allow the closure of the four old units of Kozloduy.

Energy efficiency makes special sense in Bulgaria because their present energy use is like India's extremely inefficient. On a per capita basis Bulgarians consume 5,479 kilowatt-hours every year—about 20% more than the average in European OECD countries.

The electricity that Belene was supposed to generate was mainly meant for export. Unlike India, even with inefficient consumption patterns, Bulgaria is surplus in electricity. It already

■ Yankees Getting

Mothballed

The owners of the Main Yankee nuclear reactor announced on May 27 that the reactor will be permanent! closed and mothballed. The reactor has been shut down for about a year for a number of safety deficiencies. The owners blame the shutdown on upcoming electricity deregulation and the uncertainty that power from Main Yankee would be profitable. There is just a theoretical chance that the reactor will be bought by Philadelphia Electric, but no one really believes this will happen. This is the second permanent reactor shutdown in New England in less than six months. Connecticut Yankee closed in early December 1996.

has 12,000 MW of installed capacity and its peak consumption in winter does not exceed 7,000 MW

The decision also comes at a good time for other nuclear fights in the region, where plants of similar design are being proposed for upgrade—specifically the two reactors in the Ukraine (Rovno 4 and Khlemcmtsky 2) which the G-7 wish to fund to supposedly replace the operating reactors at Chernobyl. So, this is great news which could reverberate in all Central and Eastern Europe!

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Fire leads to Meit-down of People's confidence in Japanese Nucleocrats

Japan has aggressively pursued nuclear energy in order to ease its dependence on imported energy sources such as oil. It remains one of the few countries developing breeder technology. About 30 percent of Japan's power comes from nuclear plants.

On March 11 at 10.06 am local time, a fire broke out at the nuclear waste disposal facility near Tokai village in Ibaraki Prefecture just north of Tokyo, Japan. This fire led to an explosion about ten hours later. The blast shattered windowpanes and destroyed a hatch and a thick lead door. This door isolated the hazardous area from the areas beyond, its destruction exposed the environment to contamination.

The waste disposal facility concentrates low level liquid nuclear waste and mixes it with bitumen in a process called bituminization. The fire started in the room where barrels are filled with bituminized waste. Since the liquid waste arises from reprocessing, it contains caesium, strontium, ruthenium as well as plutonium and trans-uranic elements

Nero Fiddled!

Nucleocrats Prefer Golf

Power Reactor and Nuclear Fuel Development Company (PNC) the owners of the plant, assumed that the fire had been successfully extinguished by a manually operated sprinkler, even though the room was still full of smoke; this serious error led to the explosion 10 hours later.

Senior staff started a four-day golf tournament on the day of the accident and they continued playing both that day and the next day when it was realised the accident was much worse than initially thought. One of the staff who took part in the golf competition said

they thought "it would be wrong" to cancel the game when they had reserved the golf course.

The government sought criminal charges against its own nuclear development agency because a series of accidents and coverups have angered the public and spurred doubts about the program's future.

The Science and Technology Agency filed a criminal complaint with police asking them to pursue charges against the Power Reactor and Nuclear Fuel Development Corp., or Donen, for falsifying facts regarding the accident. Donen said in an official report to the government that someone had confirmed the fire had been put out, but no such confirmation had occurred.

Donen acknowledged that several officials acted together to falsify the report, and it has demoted five of them. At least 37 workers were exposed to low doses of radiation during the plant accident, classified as Japan's worst.

For years, there seemed to be no stopping Japan's controversial programme to use highly toxic plutonium to make energy, despite mounting protests at home and abroad. The unprecedented action against state backed Donen is a sign of growing resolve in government circles to heed calls for reform. Prime Minister Ryutaro Hashimoto, speaking of Donen after the Science and Technology Agency's announcement, promised to "investigate them thoroughly and beat them into shape."

The action against Donen came a day after the government said Donen waited a full day before disclosing that an experimental reactor in Tsuruga, western Japan, was shut down because radioactive water leaked from an exhaust pipe.

Another controversial Donen project is located in Tsuruga - prototype breeder reactor intended to run

on plutonium. An accident and subsequent cover-up there in December 1995 further marred Donen's reputation.

Yukio Kurita, governor of Fukui Prefecture where Tsuruga is located, told reporters that "Donen can no

longer be trusted

with Japanese energy policy unless it is completely overhauled."

Anger is also growing against Donen's overseers in government, something Science and Technology Agency chief Riichiro Chikaoka acknowledged during a news conference. "This is something we really have to work out very soon or else Japan's entire energy program itself could grind to a halt," he said.

Despite the action against Donen, some anti-nuclear activists say it is too early to hope for the kind of fundamental overhaul they're looking for in Japan's nuclear development program.

"I doubt that much will change." said Hideyuki Ban of the Citizen's Nuclear Information Center. "Japan's plutonium program still needs to be completely rethought."

Source: Nuke-Info Tokyo

Japan Atomic Energy Commission (AEC) Chairman Riichiro Chikaoka has confirmed that Power Reactor and Nuclear Fuel Development Corp. (PNC) will be scrapped and replaced with a new organisation which will focus on fewer projects.

Taiwanese Shipments of Nuclear Waste to North Korea

apioca, Taiwan's government-run power utility, signed a contract in January to ship up to 200,000 barrels of low-level waste for final storage in North Korea. Strong local opposition by the indigenous Yami people to the dumping of nuclear

Ho. "Taipower has misled the people of Taiwan, the international community and the governments of neighbouring countries about the dangers associated with shipping and disposing of their radioactive waste in North Korea."

The Taiwanese export their spent resins Indians dump them near streams

During the survey at Rawatbhata Nuclear Power Station in Rajasthan we found coffee and white coloured bead like substances dumped near streams. On being shown pictures the then AERB chief exclaimed, "What are these spent resins doing there!"

The Greenpeace team was accompanied by John Large of Large & Associates, a British nuclear engineering firm retained by Greenpeace to do an independent evaluation of Taiwan's nuclear waste sector. The group conducted a 10-day study of the nuclear waste sector, and inspected waste facilities at the Kuo Sheng nuclear power plant and on Lanyu Is-

land.

waste in shallow trenches on Lanyu Island, 65 kilometers off Taiwan's Southeast coast, and by five candidate communities for a new waste disposal facility on Taiwan, forced the company to search abroad. They failed in attempts to dump the waste in the Marshall Islands and Russia. North Korea, impoverished by the years of misrule by "great leader" Kim ul Sung and clan is suffering a severe famine this year and is willing to pay any price to gain hard cash. If the shipments proceed, they set a dangerous precedent: it would be the first time, anywhere, that radioactive waste is exported for final storage.

They discovered that (the so-called low-level radioactive waste, which Taipower plans to export to North Korea, contains ion exchange resins and filter masses, some of the most dangerous wastes produced by nuclear reactors. Ion exchange resins are used to strip liquid streams in the reactor primary circuit and irradiated (spent) storage fuel ponds. The resin beads or pellets concentrate a wide range of (radio) activated and fission products. In terms of (radio) activity and persistence (half-life) ion exchange resins are very active (20.1012 Bq/m³ to 200.1012 Bq/m³) and very long-lived (tens of thousands of years). The current Taiwan nuclear program will generate approximately 100-120 m³/year raw ion exchange waste, or about 200-290 m³ packaged per year. "The waste that Taipower chooses to call low level, and claims will not demand special handling, is actually a soup of highly radioactive poisons that requires complex technology, highly trained personnel, and a fully devel-

oped infrastructure in order to fulfil the most rudimentary safety requirements," said Large. He added "By exporting their waste. Taipower is creating the potential for serious environmental consequences for North Korea. Taipower must deal with its own waste, including removing it from Lanyu Island, and it must immediately cancel this dangerous and irresponsible agreement with North Korea"

Although no international agreement at present bans waste exports, the scheme is clearly in violation of the principle of the International Atomic Energy Agency (IAEA) that radioactive waste must be cared for in the country of origin unless safety of treatment is enhanced by export. The IAEA General Conference Resolution of September 20, 1996, states "Radioactive waste should, as far as compatible with the safe management of such material, be disposed of in the State in which it was generated, whilst recognising that, in certain circumstances, safe management of radioactive waste might be fostered through voluntary agreements among Member States to use facilities in one of them for the benefit of the other States." The principle is repeated in Point IX of the Preamble to the Draft Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. The convention will be opened up for signature in September or October 1997. All countries will be able to become parties to the Convention, not only IAEA member states. The Director General of the IAEA said on May 27, in South Korea, that the planned waste Taiwan-North Korea exports will not be supervised by the IAEA: "No international organisation has supervisory rights"

Source' WISE News Communique

With the Instability of a Greek Tragedy

The Continuing Disaster at Kaiga

Tragedy makes the best theatre. We know the inevitable end and yet we watch fascinated as it unfolds. There are warnings galore of the impending disaster but the protagonists in their hubris continue on their disastrous course.

The construction of a series of nuclear reactors at Kaiga has all the makings of a Greek tragedy except one. The ancient Greeks concerned themselves with doings of heroes. The actors on the Indian nuclear stage are anything but that.

The following is taken from two news-reports which appeared in the Deccan Herald of April 22 and 24, 1997. It is said of the Bourbons of France that they forgot nothing and they learnt nothing. The Indian nuclear establishment can any day put imperial France to shame. It has not only learnt nothing but it feels that there is nothing to learn. Even lowly station directors issue statements where losses of billions of rupees are tossed away as if they were peanut shells. The chairman, doesn't feel that he has a responsibility to the public to explain the most ridiculous accident in a nuclear power plant anywhere in the world. Leave alone giving explanations to public, the establishment doesn't even think that they need to fix responsibility for an accident which if it had occurred after the reactor had started operations would have meant a write-off of vast stretches of land and untold misery to people. Without going into the technical details of "radial tensions generated by inadequately grouted cables, (see below) one can still be amazed at a system which allows contractors and designers to summarily change plant specifications at will bypassing the whole system of multiple checks and certifications. But the most amazing fact of all is that we the people stand for all this nonsense and allow such shenanigans to take place without protest.

What is a few thousand crores here and there!

The two 220 mega-watt reactors of the Kaiga nuclear power project are likely to be commissioned during 1998-99, slated its Director V K Sharma.

Speaking to Deccan Herald, he said the cost of the two units was estimated to touch Rs.2.275 crore. This massive hike in cost, from the original estimate of Rs.774 crore in 1984, had resulted from the collapse of one of the reactor domes three years ago, rupee devaluation and price escalation.

Work on these two units of the six-reactor project coming up on the banks of the Kali river, to the east of Karwar, "is progressing at an even pace with only some mechanical and civil constructions pending"



Mr Sharma said that because of the delay in commissioning the reactors, an annual interest burden of Rs.150 crore had to be borne. The two units were initially scheduled for completion in 1995.

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The reactor dome failed because of its inability to withstand radial tension generated due to pre-stressing of cables, which were inadequately grouted, Mr Sharma said. Affirming that the design was weak and faulty, he said new specifications • such as increasing the dome thickness by 110 mm and changing the concrete grade from M45 to M60 - had been incorporated.

Similarly, the placement of cables had been made less congested, radial reinforcement added and quality control on construction tightened. How-

ever, Mr Sharma revealed that other than these specifications, the overall design had not been changed.

Those not responsible have been punished adequately

Nor had the designer and contractor been replaced, even though the contractor had been found to have deviated from the specifications "with the consent of the designer". Describing the dome failure as an error in judgement, Mr Sharma said only some of the personnel involved in the project had been shifted out.

Following the incident, two inquiry committees set up by the Atomic Energy Regulatory Board and the Nuclear Power Corporation of India Limited probed the causes of the dome's collapse. These bodies, though differing on the exact cause of failure, have listed certain deficiencies in design and execution but have not fixed re-

sponsibility on any party. Given the interest burden, it is more important to speedily reconstruct the dome. Mr Sharma felt.

The Kaiga project, situated amidst verdant hills barely 20 km from Goa's southern border, has raised apprehensions about the effects of an accidental radioactive fall-out from the uranium-based plant on human health and environment, among the surrounding population particularly after the dome failure.

Responding to these fears, Mr Sharma asserted that nuclear power was benign and ecologically safe. The only two nuclear accidents that occurred in the world, at Chernobyl in the erstwhile USSR and Three Mile Island in the United States, were due to technical faults.

But for its own weight, the reactor can withstand anything and anyway radiation is good for you! He said the Kaiga plant was designed to withstand natural calamities like cyclones, seismic tremors and flooding. Besides, it allowed for double containment of radioactive leakage, a 3.2 km exclusion zone which was more than the globally adopted limit. Moreover, a recent World Health Organisation study had ruled out that radiation caused cancer, he said.

Public Accountability?

Never Heard of it!

A high-power parliamentary panel has asked the Department of Atomic Energy (DAE) to clarify whether the Kaiga nuclear plant unit-1 received the Atomic Energy Regulatory Board's (AERB) approval.

According to a recent report of the parliamentary standing committee on energy, the action taken on the report submitted by the department did not clearly mention whether it had got the

nod of the board for the revised design of inner container (IC) dome of the Kaiga unit-1.

The IC dome had collapsed two years ago delaying the execution of many other on-going projects, including Kaiga-2. While the DAE apprised the committee that the revised designs for the Kaiga-2 and the Rajasthan Atomic Power Plant units 3 and 4 had been approved by the AERB, there was no mention about the Kaiga-1. the report said.

The 44-member committee also wanted to know the clearance given by the board to all the units, including the design of the supporting structure required for casting the dome as well. It urged the department to inform it of the progress of all the units in the pipeline from time to time.

Oliver Twist resides at Anushakti Bhuvan

The committee, headed by former Jammu and Kashmir Governor and Lok Sabha member Jagmohan. expressed serious concern over the department's inability to utilise all the budgeted funds during the Eighth Plan period. The shortfall, according to the report, had been due to the DAE's inability to mobilise enough internal and extra-budgetary resources.

The department apprised the committee of its efforts to seek an enhancement in net budgetary support by Rs.330 crore and a corresponding reduction in IEBR for the current year plan. The DAE has also requested the Union Finance Ministry and the Planning Commission to substantially step up the equity support of the Nuclear Power Corporation (NPC) from the present Rs.345 crore to Rs.1,000 crore and is currently awaiting their reply.

Source: Based on two items in Deccan Herald

A Voice From Within

Opposition to Science Based

Stockpile Stewardship Programme

The US like other nuclear weapons powers is poised on the horns of a dilemma. On the one hand they already have too many nuclear weapons. Thousands of them, in fact. They realise that they, or any body else for that matter does not 'need' so many. On the other hand, years of nuclear weapons production has created a strong lobby which has known nothing else and wants to continue doing the same.

A world where nuclear weapons constitute the currency of power is an inherently extremely unstable world. Countries which do not already have these weapons but have notions of their 'rightful' place in the world, hanker after them in (he hope that possession of nuclear weapons will confer on them the status of a 'big' power. Countries which already have the weapons feel like passengers in third class compartment that no new member can be allowed to join the already overcrowded 'club'

In this cauldron of dubious motives are the vast majority of ordinary folk. People like you and me. who realise that these weapons are unhealthy for them, their children and other living beings. They want a world free of nuclear weapons and in these democratic times they need to be propitiated by at least some semblance of effort towards elimination. How to keep (he people satisfied while at the same time maintaining super power status and control is the dilemma.

Bill Clinton's solution to this has been ingenious. Freeze is the key word here. Freeze everybody where they are on the nuclear learning curve. No new tests and no new military fissile materials production. With all the world congealed at the current level, the status-quo as regards power is also fro-

zen solid and besides you earn the gratitude of millions for having the vision to take the world away from the dangerous nuclear course!

Like always there is a fly in the ointment. Two flies actually. One is India with Pakistan in tow. Being used to third class travel for ages, they know that create enough of a nuisance and you are bound to get accommodated.. But the other fly are the weaponeers in the nuclear weapons states themselves. They are loath to give up a lifetime's lucrative and stimulating occupation, just so that the world could be a safer place to live in and unlike India, these guys have clout.

To give his grand design a chance, Bill Clinton capitulated before the weaponeers. To get their support or rather to prevent their active opposition to the Comprehensive Test Ban Treaty, he bribed them and Clinton is in a position to give far more than a King's ransom! The result has been a \$40 billion giveaway called the Science Based Stewardship Program. All kinds of new gadgetry and facilities where new physics can be learnt without carrying out the tests with their unpopular fallout, so that new exotic weapons can continue to be made and the world made ever safer for democracy and the American way of life.

This tale ought to end here with everybody but the villain (India) happy. But, this time there is a new fly in the ointment!

Writing in Nature, Ray Kidder, now retired, but who worked on weapons at the Lawrence Livermore National Laboratory for 35 years, says that government plans to "manage" the nuclear warhead stockpile won't work. It could, he argues "be maintained certifiably reliable and safe for decades (or even centuries) by continuing the assiduous and perceptive surveillance that has been practised for many years."

The government argument is that they will have to continue basic warhead research simply as a matter of national and international security, and they will have to understand what is happening to the existing stockpiles just to keep them safe and they will have to keep up teams who know how to make bombs because these are also the people who know how to dismantle them as they become dangerous.

The US is dismantling warheads at the rate of about 1,800 a year; it has stores of about 8,000 lumps of plutonium already removed from the weapons stockpile by the remaining arsenal is still vast, and likely to stay so for decades. The fissile plutonium in the warheads remains a potential target for terrorist theft but is otherwise safe; the metal casings, however and the high-explosive triggers and plastic components are likely to deteriorate with age. The US Department of Energy has announced a 10-year, \$4bn a year programme to make changes in both the material in warhead, and the designs.

This is what upsets Kidder. He argues that it would be perfectly safe simply to "remanufacture" an already tested weapon: there is no need to change the material in it or the design. As Kidder sees it, the government expects that "expertise" can be maintained only if scientists are kept busy continuously modifying weapons, and improving the physics involved in their destructive power. They will do this by "zero-yield" testing explosions that won't actually cause a self-sustaining nuclear chain reaction and they are proposing to do this 1000ft underground at the Nevada test site, deep enough to conceal a real test of nuclear warhead.

Activists disrupt nuclear ceremony

On 29 May, US anti-nuclear activists staged protests at the Lawrence Livermore nuclear weapons laboratory in California, during a "ground-breaking" ceremony presided over by US Energy Secretary Federico Pena.

The ceremony was to mark the start of construction of the National Ignition Facility (NIF). It included a video on two giant TV screens of the face of Edward Teller, "father of the H-bomb". When this appeared, ten demonstrators within the grounds revealed T-shirts bearing the slogan: "Nuclear insanity for ever" and stood in silence holding hands in front of the official "ground-breaking" site.

Meanwhile more than 200 people outside the fence sang, chanted and displayed slogans. Thirty-five were arrested at the Visitor's Gate as they tried to serve the lab with an "Order to cease and desist from illegal activities" (...such as the NIF). Local police did not accept their claim that Lawrence Livermore was breaking the law by ignoring the World Court ruling that "there exists an obligation to pursue in good faith and bring to a conclusion negotiations on nuclear disarmament in all its aspects..."

He thinks that all the weapons laboratories need to do is remanufacture new warhead as old ones deteriorate. That would not be misunderstood. An attempt to try new, however, could be interpreted as a step towards "novel" weapons. And, he says, it is no good the Department of Energy suggesting that remanufactured weapons would not be reliable.

Since 1972, there have been 17 "stockpile confidence tests". One of the warhead tested was nearly 30 years old. In all but one of those tests, neither the age of the weapon nor the way it had been put together made any difference to the outcome. A result like that would not have been possible if the designers had not done the job properly in the first place.

Space Probe Explodes, Plutonium Missing

It was brighter than the brightest star, said John Van der Brink, and had tail about 12 times the width of the full moon with "sparkling bits sort of coming off the back of it. This was an extraordinarily spectacular event."

From his vantage point in the mountains of northern Chile where he and his wife had gone to watch meteors, he had "no illusions that it was anything other than a piece of space debris" falling to Earth through the ink black night sky. Van der Brink recently retired as an electronics specialist from the European Southern Observatory in Chile.

Leo Alvarado, a postgraduate student of geology from Chile's Universidad Catholica del Norte, who had been driving with four colleagues across the Atacama Desert in northern Chile, saw it too, changing brilliant colours as it came down. "We watched it break up into many pieces and burn," he recounted.

What they and other eyewitnesses saw last November 16 was Russia's Mars 96 space probe descending along a swath of Chile and Bolivia and scattering its remains across a 10,000 square mile area. The probe carried about a half pound of deadly plutonium divided into four battery canisters that were to serve as electricity sources for Mars rovers. Like their US counterparts, the containers were touted as sufficiently strong and heat resistant to remain intact, no matter what. The US is now admitting that may not have been the case.

"Named after Pluto, god of the underworld, (plutonium) is so toxic that less than one-millionth of a gram, an invisible particle, is a carcinogenic dose," emphasised Dr. Helen Caldicott, president emerita of Physicians for Social Responsibility. If the

probe "burned up and formed fine plutonium oxide particles...there would be an increased hazard of lung cancer," commented Dr. John Gofman, professor emeritus of radiological physics at the University of California at Berkeley, who investigated the 1964 crash back earth of a US SNAP-94 (System for Nuclear Auxiliary Power). When its plutonium-fuelled space power system burned up in the atmosphere. 2.1 pounds of plutonium vaporised and dispersed world wide. Dr. Gofman has long linked that accident with an increased level of lung cancer.

What Me Worry!

"There are two possibilities." says Gordon Bendick, director of legislative affairs of the National Security Council, about the fate of the canisters. "One, they were destroyed coming through the atmosphere (and the plutonium dispersed]. Two, they survived and impacted the earth and drove through penetrating the surface ... or could have hit rock and bounced off like an agate marble. ...I don't give any credence for any one (possibility] because I don't know."

"If the canisters burned up in the atmosphere, bottom line here, if they weren't heat resistant enough to stand what I would call a nonstandard re-entry pattern, the release was may be up to 200 grams of plutonium. which is like a drop of blood in the Pacific Ocean. There is no environmental problem with a couple of hundred grams. ...If in fact this thing survived re-entry into the atmosphere and these things came down and crash impacted on the Earth — they were meant to penetrate the Mars, their original target — they'll never be found. And even if they did and were found, people could walk around with them in their pants pockets for the rest of their lives and *never* be bothered. ...If it became paniculate matter after diffus-

ing in the atmosphere, burned plutonium would be much similar to open air testing that the French did in the Pacific as recently as a few years ago Nor was that possibility dangerous, since 'we can find no positive casual link between radioactivity released in atomic bomb testing done by the US in Utah, for example, and cancer."

Such serenity did not always reign When the US Space Command announced on November 17, 1996. that the wayward Russian probe "will re-enter the Earth's atmosphere ... with a predicted impact point ... in east-central Australia" in a matter of hours. President Bill Clinton telephoned Australian Prime Minister John Howard He offered the "assets we have in the Department of Energy" to deal with any radioactive contamination (Clinton was planning to fly for a state visit, the first stop before an Asia tour)

The Australian military and government were placed on full alert The US television networks all featured stories on their Sunday evening news programs Some people "hit the panic button when President Clinton rang the Prime Minister," reported the *Irish Times* from Adelaide: A "national crisis" had been "sparked by this inter-planetary ballistic bungle." Others hit the bottle: "A barkeeper in the tiny outback town of Tibooburra offered his customers free beer after officials announced the probe might land in a nearly swamp. A bookmaker in central Australia's Alice Springs said dozens of gamblers tried to place bets on where the Russian probe would crash."

Masters of the Idle Boast

"Masters of Space" is the motto of US Air Force Command (US SPACE COM) — The arm of the U S Air Force charged with space warfare and tracking man-made objects in space. They made a series of spectacular blunders Though November 17, the day *after*

the Mars 96 space probe had already fallen on South America, the Space Command remained focused down under.

On November 17, the Space command made a prediction: The probe would fall not on Australia, but to the east, in the Pacific. "Mars '96 probe landed in the water," heralded *USA Today*. "That means the radioactive batteries in its lander vehicles with their ...ounces of potentially lethal plutonium, lie at the bottom of the ocean."

Prime Minister Howard went before Australia's House of Representatives: "It does appear that what we all have is a happy ending to the saga of the Russian spacecraft." The *Washington Post* ran the headlines: "Errant Russian Spacecraft Crashes Harmlessly After Scaring Australia."

They were all wrong. On November 29, It days later, the US Space Command completely revised its account: "We now believe the object that re-entered on November 17, which we first thought to be the Mars 96 probe, was in fact the fourth stage of the booster rocket, rather than the probe itself and the batteries.

Racism and Spacism

But the problem went beyond simple technical incompetence. "You can clearly see the double standard," charged Houston aerospace engineer James Oberg., "Australia got a phone call from the President, and Chile got a two-week-old fax from somebody. Are the lives of Australians worth more than the lives of Chileans?"

Months later, the fate of the probe and the plutonium it carried remains unclear. The US, which gave a presidential-level pledge of "assets" to Australia to deal with any radioactive contamination when it looked like the probe was falling on Australia, was not providing any assistance to Chile or Bolivia. Dr. Luis Barrera, an astrophysicist and director of the As-

tronomy Institute at the Universidad Catolica del Norte, said that NASA officials had e-mailed him thanking him for gathering eyewitness accounts of the probe's disintegration. Then the agency's interest subsided. He suspects NASA doesn't want too much attention paid to this event because bad publicity might impact on NASA's already controversial plan to launch a reco 1723 pounds of plutonium on its Cassini probe scheduled for October. The Russian government has been "uncooperative," said Barrera, still not giving Chile a description of the canisters so that searchers would know to look for -if the batteries remained intact.

The US news media were similarly blase about the implications for Latin America. The *New York Times* relegated the story to a five-paragraph Reuters dispatch under "World News Briefs" buried inside its December 14 edition.

As to why the US was not providing the "assets we have in the Department of Energy" that Clinton promised Australia? According to Bendick at the NSC, "It's not the United State's responsibility to protect the world from this.... We told Bolivia and Chile that we would provide technical assistance, but they haven't requested any. They asked for technical data and we provided information on the radioactive combination of the air, the ground and the water, and we said it is negligible."

There did not, however, seem to be any hard evidence for that optimistic assessment. In January, the Chilean government asked its ministers of Defence and Interior and the Chilean Nuclear Energy Commission to conduct a study "to determine with absolute certainty if there was radioactive contamination. There is concern because the water source for several cities is in the impact region.

Accidents Happen

While the Mars 96 accident reminds us all that not only *can* accidents happen, but they do happen with disturbing regularity.

Bringing that message home in a spectacular way on January 17 there was an explosion of a Delta 11 rocket lofting a \$40 million US Air Force navigational satellite. The 12-story, \$55 million rocket blew up 13 seconds after launch. As the burning fragments descended over a wide area, a cloud of toxic chemicals formed above the site and began drifting out to sea. then back to land and then south along Florida's Atlantic Coast. It contained nitrogen tetroxide and monomethylhydrazine, components of the rocket's fuel - both described by NASA documents as "deadly if a person comes into contact" with them. Residents as far as Vero Beach, 100 miles away, were told by the Cape Canaveral officials to stay inside, close all windows and doors, and turn off air conditioning and heating units. At the Cape Canaveral Elementary School, Brad Smith, a fourth • and fifth-grade teacher, described the cloud as having "weird purples and blues and reds." He said he pushed wet paper towels under the door to his classroom to keep the rocket fumes away from his students.

The accident occurred just where a Titan IV rocket is scheduled in October to launch the Cassini probe that will be carrying 72.3 pounds of plutonium. Flight failures are fairly routine and any claims that there is no real danger from Cassini is false. Nuclear cargo is a setup for catastrophe.

Dispersing Danger

Whether or not Cassini explodes or is even launched, its use of radioactive material has already done damage. In July 1996, Los Alamos National Laboratory reported increased contamination of workers and equipment and cited work on Cassini's plutonium-fuelled systems as the primary cause.

Plutonium, stresses Greg Mello of the Los Alamos Study Group, is inherently dangerous to work with and "increased work with plutonium will cause increases in worker exposure."

If the Cassini mission goes forward, many more people could be impacted. The initial danger is that a blow-up on launch could break open or melt the plutonium-carrying canisters and spread radioactivity. The second potential flashpoint is the "slingshot manoeuvre" planned for 1999. In this "flyby" scheme, 22 months after launch, NASA will swing Cassini back towards Earth in order to use the planet's gravitational force to gain enough velocity to propel the probe on to Saturn, its final destination. During that Passover. Cassini is to fly just 312 miles above the Earth's surface. But if there is a miscalculation or malfunction and it comes in too close and undergoes what NASA calls an "inadvertent re-entry." it could burn up upon hitting the 75-mile high atmosphere, spreading plutonium over a wide area.

NASA PR material gives the impression that even then, the plutonium would not be dispersed as cancer-causing vapour and respirable particles. But, in fact, the space agency's *Final Environmental Impact Statement for the Cassini Mission* totally contradicts that, saying, if the Cassini probe dips into the Earth's atmosphere during the "flyby," a sizeable portion of the plutonium fuel should be released, including much of its as "vapour or respirable particles."

The NASA Final Environmental Impact Statement for the Cassini Mission also says that if there is such an "inadvertent re-entry" during the planned Earth "flyby" of Cassini on August 16, 1999, and the probe breaks up dispersing plutonium, "approximately five billion of the estimated seven to eight billion world population...could receive 99 percent or more of the radiation exposure."

Despite the danger signs with which Mars 96 and Delta II lit the sky, the Clinton administration is pushing ahead not only with Cassini, but with other nukes in space. In September, the administration announced a national space policy that includes the development of nuclear-propelled rockets for military and civilian uses. The Defence Special Weapons Agency will work on "multiple nuclear propulsion concepts" for military missions, while NASA's Marshall Space Flight Center's Advanced Concepts Division, along with Los Alamos National Laboratory, will develop nuclear propulsion for civilian uses.

Meanwhile, at the 14th Symposium of Space Nuclear Power and Propulsion in Albuquerque in January, scientists from Brookhaven National Laboratory recycled a plan to rocket high-level nuclear waste into space. The US government had proposed this same scheme decades ago, but rejected it out of fear that an accident on launch or a fall back to Earth would douse the planet with atomic waste.

US acknowledgement that radiation may well have been released over Chile and Bolivia when the Mars probe nosedived back to Earth is tacit admission that safety systems are not fool-proof.

Says John Pike, director of the Space Policy Project of the Federation of American Scientists: "If you liked Mars '96 you'll love Cassini."

Karl Grossman



It is a Small World

SELLAFIELD CAESIUM FOUND IN ARCTIC OCEAN

New figures show that caesium contamination from the Sellafield reprocessing plant in UK has reached Canadian waters. The contamination, which has never been detected so far north, is having a bigger impact on the Arctic than the Chernobyl accident, according to new Canadian data. Iodine-129 from Sellafield has shown up beyond Siberia to the north-western shores of Canada at a depth of 200

***Despite the
danger
signs, the Clinton
administration is
trying to populate***

meters the radioactivity is 10 times greater than the background level from nuclear weapons fallout. It is estimated that Sellafield has released 40,000 billion Becquerels of caesium-137. So far, about 15,000 billion becquerels of this have reached the Arctic. That is between two and three times more than the contamination from Chernobyl in the same ocean. The largest discharges from Sellafield up to now were in the late 1970s and early 1980s, with peaks in 1975, 1977 and 1980. The same peaks showed up four years later in the Barents Sea. North of Norway the radioactive plume splits itself in two. Part of it goes along the Siberian coast and crosses the North pole towards the

Canadian coast, another passes north of Iceland via the south coast of Greenland to the Canadian coast The research was led by the Bedfors Insti-

October / November 1996

tute of Oceanography in Halifax, Scotland.

Source New Scientist. 10 May 1997

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All is Just Not Kushaal at Khushab

U.S. officials last week categorically denied a report from Pakistan which claimed that an unsafeguarded reactor near Khushab has started operating. One official monitoring nuclear developments in Pakistan told *Nucleonics Week* instead that "all the data at hand indicates that the reactor is still cold."

Two weeks ago, the Pakistan English-language newspaper *Dawn* asserted that the reactor is finished and has started up, but cannot produce electricity or reach full power because of a shortage of heavy water

Western officials conjectured that the Pakistan claim may have been triggered by a construction milestone at the reactor site or planned in response to recent reports that India has deployed the Prithvi ballistic missile.

In 1994, Western officials had claimed that Pakistan was building a plutonium production reactor, rated at between 50 and 70 megawatts thermal, at a site near Khushab. These sources later added that intelligence pointed to construction of a fuel fabrication or reprocessing centre near the reactor. As late as this April, however, a member of the Pakistan Atomic Energy Commission denied flatly that the reactor existed.

According to one U.S. official this week, however, the Khushab reactor "is definitely out there" but not scheduled to be finished "until later this year or sometime in 1998." Another official said that, under the most optimistic schedule, completion of the reactor "is several months away." Sources indicated that the reactor had not yet undergone cold testing, let alone become critical.



The Pakistani report suggested that the reactor would be used for electricity production as well as for isotope production. Recent surveillance photographs of the site, however, do not indicate, that Pakistan is building power grid infrastructure, such as turbine generator equipment, for electricity generation over, Western officials said, it is not believed that reactor's chief purpose is isotope or silica production, as stated in the Pakistani account. Pakistan has a technical co-operation program with the IAEA for these activities, "but none of this has got anything to do with Khushab," one Vienna official said, and the IAEA "has not been informed" by Pakistan that the reactor is under construction or that Pakistan plans to incorporate the unit into its existing technical co-operation program.

Sources said that, because Pakistan is facing a massive financial crisis, the U.S. and other creditor countries supporting the International Monetary Fund are trying to leverage Islamabad to keep the reactor from operating outside of IAEA safeguard. Dr. Zia Mian, a research fellow at the Union of Concerned Scientists in Cambridge, Mass observed, "If Pakistan were to start operating the reactor now, it would be taking a very major foreign policy step," demonstrating to the world that its unsafeguarded program is going forward regardless of U.S. opposition, and escalating military nuclear activities to include significant plutonium production.

Indian Report Also Unconfirmed

U.S. officials last week confirmed the assertion by *Dawn* that a critical factor which may indefinitely delay full-power operation of Khushab is shortage of heavy water. But they did not confirm recurring Indian reports that China, which the U.S. believes to have supported construction of Khushab,

also provided heavy water for it. According to Western intelligence sources, a full inventory of heavy water for the unit would be about 15-17-metric tons (MT), though it could go critical with a smaller amount.

Indian sources said that, in 1996, China sold Pakistan 40 MT for Khushab. U.S. officials said the Indian government had told Washington this recently, but U.S. government agencies "could not confirm" the Indian assertion. A U.S. official said last week that, when New Delhi made the allegations to Washington, the U.S. "went back to the Chinese on this" and received assurance from Beijing that Chinese entities did not sell heavy water to Pakistan for Khushab.

According to the Pakistani report, administrative difficulties in Pakistan had prevented heavy water from being allocated for the Khushab reactor. Sources said that, in fact, most of Pakistan's scarce heavy water resources have, over the last two years, been allocated for the Karachi Nuclear Power Plant (KANUPP), which requires massive quantities of heavy water but which is also safeguarded. That allocation, sources said, reflected a general policy by Pakistan under former prime minister Benazir Bhutto not to take any step, such as producing high-enriched uranium (HEU) at the Kahuta centrifuge enrichment plant, which would be seen by Washington as provocative and escalating regional nuclear tension. One source said, "Keeping heavy water at Kanupp and away from Khushab should be seen by Washington as going hand-in-hand with not enriching uranium to HEU."

— Mark Hibbs, Bonn

Nucleonics Week— July 3, 1997.

• *The Peripatetic Editor Goes Globe-Trotting*

When the cat is away the mice will play is an old saying. The *Anumukti* team is of course no cat and mouse operation, but still, when the editor goes globe-trotting, the regular production of the journal does suffer. This year, while the monsoons seems to have taken a break in Vedchhi, invitations for visits to distant lands have started pouring cats and dogs and being a self-indulgent sort. I have been unable to say no.

For five weeks during April and May. I went to U.S.A. at the invitation of Institute for Energy and Environmental Research in Washington. The purpose was to present an Indian NGO view at the preparatory meeting of the Nuclear Non-Proliferation Treaty (NPT) at the UN in New York. And at the beginning of May. I was invited by the Military Production Network—a network of antinuclear groups living near US military nuclear facilities—to come and see how they lobby their politicians. In between there was an opportunity to visit weapon's laboratories like the Los Alamos National Lab and the Lawrence Livermore Lab to meet weaponeers and try to understand their point of view. While in the US, I was also invited to give talks at universities like University of California at Berkeley and University of Nevada at Las Vegas and the MIT at Cambridge, Massachusetts.

The trip was both an inspiration as well as an education. It was inspiring to meet heroes (mainly heroines) of the antinuclear movement. Women who were ordinary housewives leading everyday ordinary lives when the nuclear circus obtruded into their lives, and slowly they had to learn the differences between rads and cads and curies and furies and fight the establishment while continuing their eve-

ryday lives. People like Marylia Jolly who lives at Livermore and whose house is the office of Tri-Alley CAREs and who now debates as seasoned weaponeers and often 'as them tongue-tied. There was Jav 'pughlan a mountaineer who puts trekking skills to good use the mountains around Los Alamos planting monitoring devices on them and who made me accompany him on one of his expeditions. Exhausting but what an education! And Lisa Crawford who got so mad at finding uranium in her backyard well in Fernald, Ohio, that she started a movement which has brought the uranium enrichment plant to its knees and has become a political heavy-weight. And so many others that if I were to mention them all by name, this article would read as the antinuclear Who's Who.

Everywhere I went. I introduced myself as coming from the Institute for Total Revolution. This was invariably followed by a nervous twitter which made me wonder that the Americans have by now become rather nervous of revolution. In one place, however, this introduction was followed by loud cheering. Jacqueline Cabasso who has done such wonderful work in Abolition 2000, turned to me and said. "This is Berkeley."

The opportunity to witness "lobbying" at first hand was also an experience, not to be missed. Lobbying is serious business and is undertaken with care. First of all the Military Production Network has a regular staff (one woman) in Washington who arranges meetings and schedules long before the event "DC days" takes place in beginning of May. Then there is a one day orientation camp where all the "lobbyists" including some as young as twelve and fourteen are told about whom to meet; their previous positions on issues of interest to the network;

the position of the network on various issues, etc. Before every meeting there is a pre-meeting amongst the participants and the group leader chalks out how he/she will conduct the proceedings; who will say what; who will take notes; the actual meeting is immediately followed by a debriefing session where every scrap of information that one may have learnt is analysed and if found to be important to the whole group is immediately reported. Amongst the people I met were a Senator, a Congresswoman, the head of the Nuclear Regulatory Agency, the Assistant Secretary of the Department of Energy and the Deputy Chairman of the Arms Control and Disarmament Agency.

Often during the trip I found myself in an extremely strange position that of having to defend the Government of India's nuclear weapons policy. The reason being that while the official kinds I was talking to were very willing to lecture India about not having nuclear weapons. I found that their own commitment to dismantling their own huge stock of nuclear weapons was not that strong. One person said. "We don't need thousands of nuclear weapons, but we do need hundreds to defend the "Free World" I said as clearly as I could that while I personally opposed the nuclearisation of India and felt that it has been and would continue to be a disaster. I do not expect a non-nuclear India in isolation and only efforts which are seen to be genuinely disarmament efforts are likely to succeed: mere non-proliferation efforts however sugar-coated will not work.

The trip had many memorable moments. Meeting Dr. John Goffman was a long cherished dream. Time spent with my host Arjun Makhijani and his extended family at IEER; with friends like Zia Mian and Ramana, has

already resulted in access to new and startling information. The Indian government has been very forthcoming with information periodically asked by the US ambassador about the Indian nuclear programme. The heads of Department of Atomic Energy have been almost obsequious in providing this information. A good deal of such information is now available through the Freedom of Information Act at the George Washington University in Washington DC. We intend over the next few issues to publish some of these arrival documents in *Anumukti* so that readers realise what sort of information, the guys who make such a fetish of secrecy in nuclear matter who hold the infamous Atomic Energy Act of 1962 like a stick to energy silence, who have had the gall of calling antinukes as foreign agree glow generous and forthcoming they have been with actual representative? of foreign governments.— *Surendra Gadekar*

● *Privatise and Perish*

The Delhi based B.K. Modi group of industries has sought the opinion of the Department of Atomic Energy to set up a nuclear power plant in collaboration with the French power company Electricite du France, confirmed DAE sources.

The sources said the atomic energy establishment was open to a dialogue on this issue. "The project, if finally approved should be technically attractive and above all consistent with the country's political thinking," a DAE source told this newspaper.

Emphasising the need for international collaboration, the sources said French possessed an advanced level of nuclear technology. Chairman and managing director of Nuclear Power Corporation Y.S.R.Prasad shared the view of the DAE officials: "Our mind is open on this matter. We are awaiting the financial and technical details of the project."

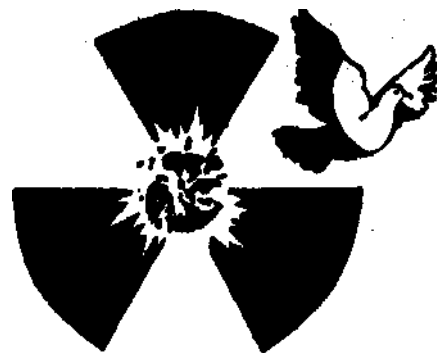
During a talk on Thursday organised by the Nehru Centre, director of the Bhabha Atomic Research Centre (BARC) Anil Kakodkar said at present the power system in India was dictated by financial consideration. "NPC has evaluated certain possibilities for coughing up resources."

Source: Times of India

Six Determination: -the \$\$\$Y way

Boys or Bust

Instead of Amniocentesis followed by murder, the better way to father boys is to join the nuclear industry. Nuclear Engineering International (NEI) has reported on a study showing that men who work at the Sellafield nuclear facility in Britain father 109 boys for every 100 girls. As NEI explained, the fact that the Sellafield work-force should produce such a high proportion of boys—the average is 105 to 100 girls—is not surprising, because younger men tend to produce a higher proportion of male offspring. However, the study also revealed that "men who had received over 10 milli-Sieverts [of radiation] in the three months before conception fathered 140 boys for every 100 girls." Of course, there is a catch to it. A study carried out by an *Anumukti* team at Rawatbhata showed that a much higher proportion of couples living near the plant were either sterile or unable to bear living children. *Source: Bulletin of Atomic Scientists*



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