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66 Citizens' Nuclear Information Center

3F Watanabe Bldg., Higashiueno 2-23-22, Taito-ku, Tokyo 110, JAPAN

Phone: 03-832-1976, Facsimile: 03-832-4930

Mutsu Experiment Restarts Amid Protests



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On March 29, Japan's only nuclear-powered vessel, the 8,242-ton Mutsu, reached the critical stage of a sustained nuclear reaction following a 16-year shutdown. The output increase experiment will continue until the end of the summer. However, there have already been three incidents in the first four days, due to technicians' errors and instrument malfunctions. Anxiety and fear are mounting among near-by residents.

Opponents have pointed out the dangers of such experiments and criticized the whole project as unnecessary, since the vessel will be put out of commission after a year-long experimental voyage.

Plutonium -Do We Really Need It ?

The Nuclear Control Institute, an American private research institute, has recently published a striking report entitled "Japanese Plutonium Supply & Demand Requirements for Research, Development & Demonstration Programs." It states that there is no need to import plutonium from Europe because Japan already has a sufficient stockpile, provided it limits the use of plutonium to the experimental reactor JOYO and the prototype reactor MONJU.

According to Electric Power News (19th Feb., 1990), the Japanese government intends to avoid making any direct comments on this report. However, the government cannot totally camouflage their sense of alarm, because the Institute's proposal, that Japan cancel the transport of plutonium and the construction of Rokkasho reprocessing plant, is in direct contradiction to Japanese nuclear policy, which is to establish a nuclear fuel cycle and make Japan self sufficient in energy.

The Citizens' Nuclear Information Center has also done an independent analysis of the supply & demand of plutonium, and has come to the conclusion that there is never likely to be a shortage of plutonium in Japan.

According to the Japan Atomic Industrial Forum, the reactors that need plutonium now are JOYO, an experimental FBR of 100MWth and FUGEN, a prototype ATR (Japanese-designed advanced thermal reactor). It is claimed that each uses about 100kg of plutonium fissile (hereafter referred to as Puf) annually. The first Japanese prototype FBR (280MWe) MONJU, which is scheduled

to come on line in the spring of 1992, requires 1400kg Puf for the initial core and 500kg annually from the next year on.

The Puf in possession of the PNC (Power Reactor and Nuclear Fuel Development Corporation) is reported to be roughly 500kg as of Sept. 1989. On the other hand, the PNC's Tokai reprocessing plant is scheduled to reprocess 60 tons of spent fuel (amount in uranium metal base) in fiscal 1989 and 90 tons annually from 1990 on. The amount of Puf extracted was estimated by the government to be 300kg in 1989 and 450kg annually from 1990. If this really were the case, plutonium might indeed be in short supply by the mid 1990s without shipments from Europe.

This is basically the JAIF version of the "domestic plutonium shortage." Figures given by JAIF and the STA are, however, very obscure, in some cases seem to have been made up, and have to be looked at very closely. The plutonium recovery rate from spent fuel which we used in our calculations was 0.6%, higher than JAIF's 0.5%, but still, we believe, a "conservative assumption." In addition, technical data indicates the annual consumption of Puf is substantially lower than the claimed 100kg. Taking these facts into account, there will already be a considerable stock of Puf by 1992.

The claimed amount of Puf possessed by PNC (500kg) is also highly questionable. According to data submitted by STA to the Diet in 1988, the total amount of Puf recovered by Tokai reprocessing plant by the end of fiscal 1987 was 1800kg, of which 210kg had been used

for JOYO and 470kg for FUGEN. This suggests that PNC already had a surplus stock of over 1,100kg by 1987. In addition, PNC obtained 1,330kg Puf from abroad, as shown in

Table 1. So the claim that the PNC possessed only 500kg in Sept. 1989 is hardly credible. Over the long term, a plutonium surplus seems even more inevitable. Table 2 shows our

Table 1. Plutonium Transported to Japan

	Year	Times	Amount Shipped	Method of Shipment	Country of Origin	Fuel type
Reprocessed	1970	1	25kg Puf	Air	UK	GCR
	1972	4	110	Air	UK	GCR
& Recovered	1973	3	60	Air	UK	GCR
	1975	1	65	Sea	UK	GCR
	1978	1	40	Sea	UK	GCR
Plutonium	1979	1	105	Sea	UK	GCR
	1980	1	190	Sea	UK	GCR
	1981	1	65	Sea	UK	GCR
	1984	1	190	Sea	France	LWR
	sub total	14	850			
Separately Purchased Plutonium	1965 -1984	?	480	Sea & Air	US, UK, France, FRG	
Grand total			1,330			

Table 2. Plutonium Supply and Demand from 1993 to 2004

	Demand	Supply	
JOYO (FBR)	1,200kg	From Tokai Plant	6,480kg
FUGEN (ATR)	1,200	From Rokkasho Plant	29,400
MONJU (FBR)	6,000	Returned from Overseas	26,150
OHMA (ATR)	4,300		
Total	12,700	Total	62,030

estimate of plutonium supply and demand for a period of 12 years from 1993 to 2004. The figures in the Table are in principle based on government data sources, where average Puf recoveries are assumed to be 0.6% and 0.7% for Tokai and Rokkasho respectively (mean burn up of spent fuel: 45,000MWD/T). So, if everything goes as planned, there will be quite a large amount of surplus plutonium.

It should also be noted that the availability factors on the demand side (capacity factors for JOYO and MONJU) will be lower than assumed by STA. The operation timetables for MONJU and OHMA - a planned 600MWe demonstration ATR - will almost certainly be delayed. In particular, the construction timetable for the OHMA plant is still quite uncertain due to persistent protests by local fishermen.

Thus Japan is expected to have an enormous stockpile of plutonium in the long run, but AEC plans to burn this surplus plutonium in LWRs, as so-called MOX (Pu-U mixed oxide) fuel. Test burning of MOX fuel has already begun in a BWR (Tsuruga 1) and a PWR (Mihama 1). But it is our belief that Japan's entire plutonium recycling program should be thoroughly reviewed, as is now being done in many European countries. For instance, even in France, where plutonium recycling has been promoted more intensively than anywhere in the world, they have arrived at the conclusion that MOX fuel use will increase costs.

In view of the huge risks accompanying the use of plutonium and the economic disadvantages which will become increasingly evident, reprocessing should be suspended worldwide. Though this has to some extent become a world trend, the key to a complete halt of reprocessing is the attitude of the Japanese nuclear industry, because Japan is the largest financial sponsor of both the two significant large-scale reprocessing plants, Sellafield and La Hague. If Japan renounced reprocessing, it would undoubtedly

lead to a worldwide suspension, which is what we would like to see happen, and which we believe will contribute to world peace. □

Three-Day Anti-Nuke Festival in Tokyo

APRIL 27

Submission to the Diet of a 2.6 million signature petition calling for the phase out of nuclear power in Japan. In the evening, a meeting with Diet Members who support nuclear phase out, and a lecture given by foreign guests. (See April 28).

APRIL 28

Anti-nuke rally with participants from all over Japan/ A. Adamovich, a writer from Byelorussia, S. Pflugbeil, energy spokesperson from East Germany's New Forum and three activists from Korea will also be there. Peaceful demonstration in metropolitan Tokyo.

APRIL 29

All day anti-nuke concert and gathering. Music, speeches, traditional puppet theater, and other fun events.

For further information, contact Nuke Info Tokyo.

MITI Committee Issues Controversial Reports on Fukushima II Accident

In early January 1989 an accident occurred at Fukushima II nuclear power station (1,100MWe-BWR) operated by Tokyo Electric Power Co. (TEPCO), due to a damaged recirculation pump in the No. 3 reactor. The operator, however, kept the system running. More than 30kg of fractured metal pieces and pulverized metal then fell into the system and invaded the core of the reactor. The reactor was finally shut down on January 7.

This type of reactor (1,100MWe-BWR) is the latest model. Seven such reactors (five at Fukushima, one at Tokai and another at Kashiwazaki) are now in operation in Japan and four more are under construction (in Kashiwazaki).

The power station alarm started ringing on January 1. It was clear that the pump was in trouble and vibrating. The alarm kept ringing all day January 6 from 4 am until 7 pm when the pump stopped running. It is shocking that the power company ignored the alarm and kept the system running. It shows the alarming callousness with which the company deals with nuclear reactors.

The original report on the accident compiled by the company states: "a vibration caused the reactor to stop; three washers were lost; it was a minor hitch." This initial report was followed by a series of revised reports gradually revealing the grave character of the accident.

MITI formed, in March, a Special Committee to Investigate the No. 3 reactor of Fukushima 2 Nuclear Power Station; under the auspices of the MITI Nuclear Power Technology Advisory Committee. This Special

Committee issued an 'Interim Report' in August, 1989 and a 'Final Report' on February 22, 1990. But these 'reports' do not look into the real nature of the accidents. This is not surprising when one comes to realize that the leading members of the Special Committee are in fact members of the group which, in 1982-83, tested the reliability of the recirculation pump in the first place. This 'group' then used more than ¥3 billion to 'prove' that the pump was reliable in every respect. This 'finding' was then used to introduce the 1,100MWe-BWR to Japan. When a committee is formed to look into the nature of an airplane accident, for example, it is a rule to select only neutral people. But this rule is not respected by MITI when they study nuclear accidents. The Special Committee only 'endorsed' the power company's finding that the welding method should be modified to stabilize the under-water shaft bearing ring of the recirculation pump. The special Committee's reports are dishonest and self-contradictory: the reports on 'operational parameters', showing how the accident proceeded, are not trustworthy; diagrams showing the extent of the damage suffered by the under-water shaft bearing ring differ from each other. In addition, it was reported by the papers that some of the members of this Special Committee, disagree with its 'Final Report.'

The Special Committee claims it is sufficient to use a better method of welding to stabilize the bearing. This will not, however, stop the resonant vibration of the ring and the whole pump body which is now

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Protest Greets Asian Nuclear Confab

On March 12 and 13, the First International Conference for Nuclear Cooperation in Asia, sponsored by Japan's Atomic Energy Commission (AEC) was held in Tokyo. Representatives from China, Indonesia, Malaysia, the Philippines, South Korea, Thailand, Australia, and Japan participated. Most of the delegates were Ministers of Technology or Energy, or headed Nuclear Commissions. According to the AEC, the purpose of the Conference was to assess needs in Asian countries and seek ways to cooperate in the field of medical and other uses of radiation as well as in nuclear power projects.

Participants expressed eagerness to cooperate in various fields of nuclear technology, but nothing specific was set up or decided. Delegates just reaffirmed their intention to cooperate and continue to exchange information. They will meet again in March next year, probably in Tokyo, to discuss the issues further.

Meanwhile, a group of people opposed to nuclear power gathered outside the conference building in downtown Tokyo to distribute leaflets to passers-by and voice their opposition through megaphones. Many of the participants in this peaceful demonstration were women, concerned not only about nuclear power plants in Japan but about the export of nuclear technology from Japan to Asian countries.

Since Indonesia has asked for Japanese Official Development Assistance (ODA) to conduct a feasibility study for a planned nuclear power plant in Java, the protesters also included groups critical of Japan's ODA projects, such as the ODA Research Group, Nuclear-Free Pacific Center Tokyo

and the Rainforest Action Network.

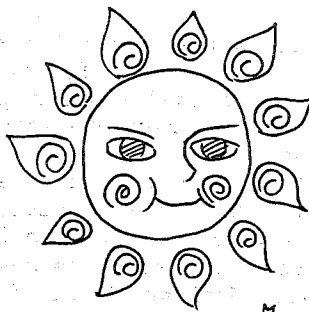
A protest statement, prepared by all the groups, made the following points.

The Japanese nuclear industry is searching for new markets in neighboring Asian countries as there is no prospect of expanding the domestic market in the face of widespread opposition to nuclear power. International cooperation in the nuclear field, as demonstrated by American companies in the Philippines, benefits only the donor country. The local people are forced to accept the technology, exposed to the hazards of radiation, and suffer from the financial difficulties.

ODA tends to be used as a means of profiting Japanese industry, not the local people or enterprises. It is now to be used as a means of developing nuclear power industries in Asian countries.

The export of nuclear power plants to Third World countries is likely to increase the risk of nuclear proliferation and the diversion of technology to military uses. This is demonstrated by the recent move of Pakistan to import plants from France.

For these reasons, we hereby demand the cancellation of this conference. □



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Nuclear Exports to Third World Countries Draws Concern

The nuclear industries of the so-called developed countries, no longer able to expand in domestic markets, have stepped up their search for new markets in the Third World. The recent announcement by French President Mitterrand, approving nuclear plant sales to Pakistan, is a good example. Electricite de France (EDF) is now in deep trouble due to excessive investment in nuclear reactors. It is believed to be 22 million francs in debt. The announcement of sales to Pakistan provoked a storm of protest around the world, from both environmentalists in France and the Indian government.

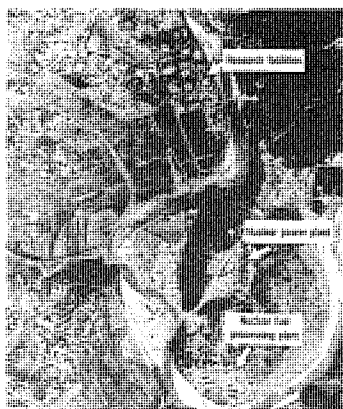
The USSR is believed to have been helping North Korea to build nuclear facilities. Satellite photos taken in September, 1989 by France's National Space Research Center, were recently analyzed by a team of Japanese scientists. They say the photos show major expansion work at what is believed to be a nuclear facility near Nyongbyong, 90 kilometers north of Pyongyang, the capital of North Korea. The photos show a large structure which was not visible in a previous photograph taken in 1986. It is not clear if the facility is for military or

peaceful purposes.

North Korea says it will accept International Atomic Energy Agency (IAEA) experts for on-site inspections of nuclear power facilities if the US withdraws its nuclear arms from South Korea.

Meanwhile in Indonesia, a target for nuclear industries in the western world for some time, the government has disclosed new plans for a nuclear power program despite announcing in late 1988 that the program would be shelved until at least 2000. Djali Ahimsa, director general of Indonesia's Atomic Energy Agency, spoke at the conference in Tokyo (see page 4), saying Indonesia hopes to have 12 reactors by the year 2015 and to have the first one on line by 2003 or 2004. Feasibility studies will begin some time this year on the Muria peninsula on the north coast of Central Java.

Ahimsa confirmed that Indonesia has asked for Japanese Official Development Assistance (ODA) to conduct feasibility studies. But Indonesia has also requested assistance from the United States and France and it is not yet decided which country will carry them out. Japanese government officials state that ODA cannot be used for building nuclear plants overseas, but can be used for feasibility studies. But if Japanese ODA is used for a feasibility study, this is bound to pave the way for the Japanese nuclear industry to build the reactor itself. In 1987, when Indonesia invited several countries to make bids for the construction of the nuclear plant, Mitsubishi submitted a joint proposal with the United States and Italy, France and West Germany also put in a joint proposal, and Canada a proposal of its own. □



Significant Incidents at Nuclear Plants

(Sep. ~ Dec. 1988)

Date	Plant	Short Description of Event
Sep. 1	PNC Tokai	Seven workers exposed to plutonium.
Sep. 17	Hamaoka 1	Leak of small amount of primary coolant through a crack developed in the in-core monitor housing at the point where the housing tube penetrates the reactor pressure vessel (found during periodic inspection).
Oct. 7	Ohi 2	21 steam generator tubes found damaged during periodic inspection.
Oct. 10	Fukushima II-1	Damage to the bearings of a recirculation pump found during periodic inspection.
Oct. 17	Takahama 2	1,334 steam generator tubes found damaged during periodic inspection.
Oct. 17	Ohi 2	75 primary coolant pump vane bolts found damaged during periodic inspection.
Oct. 17	Sendai 1	14 primary coolant pump vane bolts found damaged during periodic inspection.
Oct. 27	Ohi 1	Radioactive gas released through the stack due to a crack in the steam generator tube; reactor manually shut down.
Nov. 4	Hamaoka 2	Condenser pressurizer pump failed due to defect in earthing; repaired while operating reactor.
Nov. 13	Shimane 1	Abnormal vibration of turbine due to operational error in condenser; reactor automatically scrammed.
Nov. 30	Joyo	Malfunction of control rod during periodic inspection due to inadequate installation of control rod drive system.
Dec. 3	Fukushima II-3	Reactor scram due to neutron flux high signal; explained as caused by excessive fluctuation in recirculation water flow.
Dec. 6	Takahama 3	Four control rods dropped abruptly during functional test; reactor automatically shut down.
Dec. 8	Takahama 4	Pin hole found in a fuel rod during inspection.
Dec. 11	Fukushima II-3	Damage to main steam valve found on restarting; reactor manually stopped.
Dec. 20	Tokai I	Sudden power surge while power was about to be reduced for inspection outage; reactor manually stopped.
Dec. 20	Tokai II	Many washers found corroded and lost in auxiliary sea water cooling pump.



LLW Disposal Facility Passes STA Safety Check

The Science and Technology Agency (STA), announced its decision, after conducting a safety check, to accept on February 21 the application for permission to construct a Low Level Waste (LLW) Storage Center filed by JNFI (Japan Nuclear Fuel Industries, Inc.) as there were 'no flaws which might lead to a disaster.' The prime minister will make the final decision on whether to grant permission after another safety check by the NSC (Nuclear Safety Commission).

As part of the double check by NSC, a public hearing is scheduled for April 26. It will be the first public hearing concerning a nuclear facility other than a nuclear power station.

The center is planned for Rokkasho-mura, Aomori prefecture. Oil drums of LLW will be stored in ferroconcrete pits built into a rock bed a dozen meters under the ground. Management of the waste will be relaxed step by step and in three hundred years or so there will be no management at all. Though called a 'Storage facility' it is in fact nothing but a disposal tip.

"There Can't Be a Serious Accident," Says NSC

A special task force of the NSC published on February 19 an interim report concerning the possibility of a severe accident to a light water reactor in Japan. They reached the optimistic conclusion that there was no need to review safety controls in Japan since 'The safety standards in

Japan are high enough to deny the possibility of a serious accident in a technological sense.' They had been studying the issue since the Chernobyl accident.

They said they would develop a data system and improve their method of analysis to establish a better PSA (Probabilistic Safety Analysis).

CRIEPI Announces Method of Shortening TRU Half Life

The Central Research Institute of the Electric Power Industry announced on March 2 that the half lives of the long-lived trans-uranic elements (TRU) contained in high level waste may be shortened by burning them in an FBR. CRIEPI stated that they would like to develop the technology by 1997.

Similar ideas have been discussed many times in the past, but none have led to the development of practical technologies. In the present situation, when even a workable FBR has yet to be developed, the idea seems highly unrealistic. In any case it proposes merely to change the elements into different nuclear species with half lives of several decades, which may create additional problems.

The announcement is probably best seen as propaganda by the nuclear power promotion lobby, which wants to play down the waste problem. Masatoshi Toyoda, President of Japan Nuclear Fuel Service Co., which plans to construct a reprocessing plant in Rokkasho, Aomori prefecture, states; "the idea is technically feasible, but in view of its low economic and energy efficiency it is questionable whether it will be realized. (January, 1990 issue, Genshiryoku Kogyo).

Japan-US Conduct Joint Experiment on New Monitoring Technique

The Japanese and U.S. governments agreed March 7, to conduct a joint experiment for one year on an unmanned remote-control system which has been developed to safeguard nuclear materials from terrorism or break-ins. The experiment will be carried out jointly by the Arms Control and Disarmament Agency (ACDA) of the United States and the Japan Atomic Energy Research Institute (JAERI). The plutonium to be monitored will be placed at the Sandia National Laboratories (SNL) in the U.S.. Data received by sensors will be converted into ciphers by computer and transmitted via satellite to JAERI's Tokai Institute, where it will be processed and analyzed.

Since the U.S. institution has been engaged in arms development, the JAERI trade union has come out against the experiment on the grounds that it may be used for military purposes.

Kashiwazaki Unit 2 Reactor Starts Test Run

The unit 2 reactor of the Kashiwazaki/Kariwa Nuclear Plant operated by the Tokyo Electric Power Co. was started up for a test run on

February 8 and began transmitting electricity. TEPCO plants, and both units 6 and 7 passed a safety investigation by the Ministry of International Trade and Industry on February 23. At present the Nuclear Commission is double checking these reactors, which are advanced boiling water reactors with a power output of 1,356MW. Corners have been cut on their design to enhance economy.

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believed to be the true cause of ring damage and originates from the very design of the pump. Further, the reports ignore the frequent occurrence of cracks on the shaft and the casing-cover of the recirculation pump caused by heat fatigue. In short, the reports can not be trusted.

The metal pieces which penetrated the reactor core weigh more than 31kg in total. Less than half of these pieces have been retrieved during the year since the accident. The head of the power company said, immediately after the accident, that operation of the reactor would not be resumed until the metal debris had all been retrieved and the local residents agreed to such a step. He is now trying to re-start the reactor by the coming summer when demand for electricity will rise.

Such a move however will not be tolerated either by the local residents or the national consensus. The reactor must be decommissioned.□

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NUKE INFO TOKYO Publishing Committee
 c/o Citizens' Nuclear Information Center
 3F Watanabe Bldg., Higashiueno 2-23-22,
 Taito-ku, Tokyo 110, JAPAN,
 Phone: 03-832-1976,
 Facsimile: 03-832-4930
 Bank Account: Dai-ichi Kangyo Bank 089-1080344
 Hangenpatsu News