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Citizens' Nuclear Information Center

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1-59-14-302, Higashi-nakano, Nakano-ku, Tokyo 164, Japan
Phone:81-3-5330-9520, Fax:81-3-5330-9530, e-mail:cnic-jp@po.ijnet.or.jp

Fire and Explosion at PNC's Tokai Bituminization Facility



A room after the explosion, the scene from PNC's video.

*All photos by Kenji Higuchi

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On 11 March at 10:06 am, a fire broke out at the nuclear waste disposal facility, on the site of the Power Reactor and Nuclear Fuel Development Co.'s (PNC) reprocessing plant, near Tokai Village, Ibaraki Prefecture. 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. As of 20 March, PNC said that the building had been sealed.



The waste disposal facility is used to concentrate low level liquid nuclear waste and mix 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 still contains cesium, strontium, ruthenium as well as plutonium and trans-uranic elements.

Mistakes in Safety Procedures

PNC showed poor judgement in assuming that the fire had been successfully extinguished by a manually operated sprinkler, even though the room was still full of smoke, this serious mistake allowed the explosion to occur.

At the facility, rooms, where high level radioactive materials are handled, are isolated and called "Red Zones." These rooms are maintained at lower than atmospheric pressure to prevent radiation from escaping, but during and after the fire this system failed. After the fire started it only took seven minutes for the radiation leakage to set off alarms in rooms where workers were present.

PNC announced that the workers had escaped in an orderly manner, but two of them had to escaped to the roof and were rescued seven hours later. This can hardly be described as orderly.

Japan's Worst Nuclear Accident

Leaking radiation was dispersed from the bituminization facility into the adjoining low-level liquid nuclear waste evaporation facility

and other buildings. In all 37 workers were internally exposed. This is the highest number of workers ever exposed in one accident and the longest period ever in which radiation has been allowed to leak to the outside environment, in the history of Japanese nuclear energy. Later, as workers were just about to enter the room to investigate the fire damage, the explosion

occurred. Only luck prevented them from being caught in the blast.

PNC Slow in Reporting Accident

A repeatedly raised issue is PNC's slowness in giving public notice of an accident, especially after the Monju accident. The system was thought to have been improved. This time, the report of the "fire" was relatively fast, however it took more than three hours for information about the radiation leak and radiation exposure to be reported even though PNC was fully aware of events. Clearly, PNC intended the accident to be perceived as "small".

Workers' Exposure

According to the released whole body counter data of exposed workers, the maximum exposure was 2700 Bq of Cs-137 and 400 Bq of Cs-134. PNC only evaluated the data for Cs-137, and publicly stated that this exposure is only 1/2100th of the annual intake limit.

PNC's estimate is the minimum evaluation. Internal exposure was not only from Cs. Beta and gamma radiation from Ru and I-129, as well as alpha radiation from Am and Pu, should be considered.

From the assumed quantities of nuclides or amounts of radioactivity, contained in bituminized low level waste, our estimate assumed Ru, I-129 and Am, the total exposure dose could be 100 times higher than PNC's estimate, due to the powerful effect of alpha radiation on the human body.

Release of Radiation

Radiation was released into the environment by the explosion. On 18 March the Meteorological Institute at Tsukuba, which is located about 60 km, south-west of PNC's Tokai facilities, detected an abnormal level of radiation after the explosion.

The normal level is 1×10^{-6} Bq/m³ of Cs-137, but the level which was detected by the institute were 84×10^{-6} Bq/m³ of Cs-137, and 13×10^{-6} Bq/m³ of Cs-134. It was also revealed that the

Pollution Division at Mito municipal authorities which is about 16 km, south-west of the facilities also detected the radiation, the level was $41-600 \times 10^{-6}$ Bq/m³ of Cs-137.

Reportedly, PNC's estimate of the amount of released radiation was, 5.8×10^7 Bq of beta radiation (2.13×10^6 Bq of I-129) and 2.2×10^4 Bq of alpha radiation. But when we asked about the basis of the estimate, PNC stated that they were not prepared to make an estimate as of 3 April.

CNIC, however, conducted its own estimate, which is based on the actual amounts detected at Tsukuba and Mito.

The results were:

Beta radiation: 10^9-10^{10} Bq

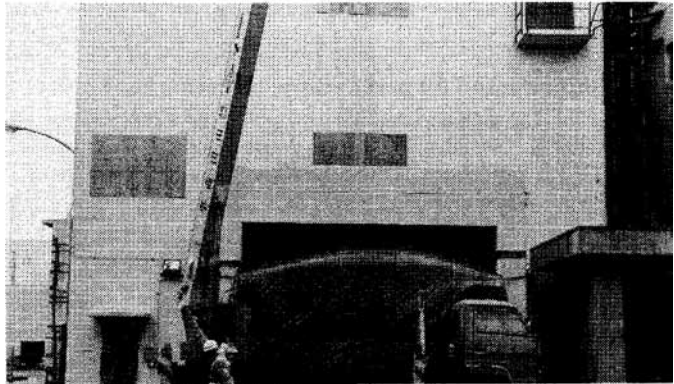
Alpha radiation: -10^7 Bq

The data supplied by PNC is insufficient for an independent analysis of the amount and type of nuclides released. While PNC announced that "there is no effect to the surrounding environment." It gave no evidence to support this claim.

Doubts About Investigation

STA has formed a committee to investigate the accident. Its investigation is supposed to be public but it is not yet known whether its deliberations will take place behind closed doors. PNC is a public company, controlled by STA, so there are concerns that the investigation will, in effect, be internal. It is open to question whether STA can investigate the accident thoroughly and objectively.

A shutter was bent and glasses of all windows were blown up by the explosion.



The Cause of the Accident

The cause of the accident is not clear, and PNC and STAs' investigation has been on-going. The possible causes of the fire are thought to be, a failure of temperature control of the room or mixing of inflammable material into the LLW. Possible causes of the explosion are, production of red-oil or hydrogen, or resolve and ignition of a sort of Na such as NaNO_3 , or creation of explosive material produced from resolved bitumen. With insufficient fire extinguishing and cooling and the maintaining of a high temperature, the explosion followed easily. The investigation must be watched carefully.

Basic Design Fault

This accident has amply demonstrated that there are still a great many uncertainties with regard to the control of chemical reactions at the reprocessing plant. These uncertainties could well be serious enough to lead to an explosion. It has also demonstrated that there could well be some very serious design faults in the bituminization facility. During the fire, the filter system became clogged very early on, yet to prevent a radiation leak it is vital that this piece of equipment does not fail. Also the building itself was clearly not designed to resist an explosion without losing its integrity.

As a result of the accident it now looks likely that PNC will have to suspend operations at the plant until 2002 or 2003 at the earliest while a new facility is built and tested.

(by Hideyuki Ban)

The Situation at Rokkasho -Part 1

In this issue and the next, NIT will be giving an overview of the Nuclear Fuel Cycle Facilities that is being built in Rokkasho-mura, Aomori Prefecture. At the facilities there are four plants: the Uranium Enrichment Plant, the Low Level Waste Repository Center, the Reprocessing Plant, and the Storage Plant for Repatriated Waste. All of these facilities are being run by Japan Nuclear Fuel Ltd. (JNFL). Some of Japan's major companies as well as the ten major utility companies in Japan have shares in JNFL.

Uranium Enrichment Plant

The enrichment plant began operations in March 1992 with a capacity of 600 tons separative work unit (tSWU)/year. The centrifuge method is used. The permitted capacity is 1050 tSWU/year. Uranium has been imported from countries such as Canada, South Africa, Australia, and France. As of the end of 1996, the amount of enriched uranium shipped totalled about 350 tons and it has been used as replacement fuel at Kashiwazaki-Kariwa, which is owned by Tokyo Electric Power Co.

Operations have not gone smoothly, though. According to the report submitted to Aomori Prefectural government, the number of centrifugal machine stoppages, due to technical problems has totalled 1,309 for the period 1994-96. The A1 cascade, which was the first to go into operation, has had the most stoppages, 1190 in all. Some problems also have occurred in the 1B cascade with 119 stoppages.

Since the company considers the number of machines under operation to be an industrial secret, the ratio of faulty to functioning machines is unknown. Whatever the true number is, nearby residents are growing more and more concerned. This many machines having trouble could be due to a serious design fault in the machinery and such breakdowns may become endemic throughout the plant.

LLW Repository Center

This is the final repository for low level waste. The No.1 facility, authorized to store 200,000 x 200 liter drums, started operation in December 1992. Out of all the low level waste produced by Japanese nuclear reactors, this facility takes the type called "homogenized solid waste." This homogenized solid waste is the radioactive liquid waste or ashes from burnt waste, which were solidified in concrete, bitumen or unsaturated polyester and stored in drums.

The transport of the waste has been regularly

carried out by a special transport ship, the Seiei-Marui, on a schedule of roughly one shipment per month. By the end of 1996 about 90,000 drums had been brought in.

In the basement of the facility there are large concrete boxes (24 meters square, 6 meters high) called burial pits, each of which can hold about 5,000 drums. Once the pit has been filled, a 50 cm thick lid is lowered onto the pit and a kind of clay called bentonite is spread over it.

On 30 January, JNFL submitted to STA an application for permission to increase the capacity of the center. The plan is to add another similar sized facility holding 200,000 drums in addition to the current one. JNFL also applied for permission to extend acceptance of waste into the No.1 burial facility for 14 more years, up to 2012. This facility will accept various kinds of solid waste such as metal and fire resistant plastic produced during routine inspections and maintenance, as well as insulation materials and filters.

JNFL is asking that the new facility be permitted a maximum allowable radiation level four times higher than No. 1 facility and that the maximum weight allowable per drum be doubled from that allowable at to No.1 facility, to one ton. The requested duration of operation is for 12 years starting in 2000.



The 2nd VHLW arrived at Rokkasho on 18 March 1997.

NIT will report the shipment and HLW storage facility in the coming issue.

The Japanese Government's MOX Utilization Policy

Recently, CNIC received copies of diplomatic memoranda, dated 10 February 1997, that were exchanged by the governments of Japan and Belgium. These memoranda are a formal arrangement to fabricate MOX fuel in Belgium, for Japanese utilities, using Japanese owned plutonium and uranium. Under the terms of this arrangement 483kg of Japanese plutonium will be transferred from the reprocessing facilities at La Hague, France to the fabrication facilities of Belgonucleaire and Franco-Belge de Fabrication de Combustible International (FBFC-International) in Dessel, Belgium. Japanese uranium amounting to 3,088 kg will be used in the fabrication.

These international negotiations were part of the government's effort to push through its plan to use mixed-oxide (MOX) fuel in light water reactors (LWRs) and are matched by some intense political negotiations here in Japan.

On 20 January, The Nuclear Energy Sub-Committee of the Advisory Committee on Energy, which advises the International Trade and Industry (MITI) Minister, Shinji Sato, released its report supporting MOX utilization and plutonium recycling. In a highly unusual move, Prime Minister Ryutaro Hashimoto's Cabinet was given the report for consideration. On 31 January, the Atomic Energy Commission of Japan (AECJ) adopted the recommendation and urged all electric utilities to fuel at least one reactor with MOX by the year 2010. The Cabinet consented to make the plan government policy, on 4 February. The necessity of Cabinet support is indicative of the plan's weakness.

To get the cooperation of the utilities, Yasuhiro Kato, head of STA's Atomic Energy Bureau, and Minister Sato of MITI both had meetings with the head of the Federation of Electric Power Companies (FEPCO), Hiroshi Araki, on 6 February. He agreed to seek the utilities' cooperation and encourage them to negotiate with local governments to get approval for MOX utilization.

On 14 February, the Chief Director of STA, Riichiro Chikaoka, and Minister Sato of MITI met with the governors of Fukui, Fukushima and Niigata Prefectures to gain their approval for MOX use in reactors in their prefectures. They did not give a definite answer at the meeting.

At a press conference on 21 February, Araki of

FEPCO announced the utilities' plan for MOX. Initially, the plan is for four reactors to be fueled with MOX by 2000. Two in 1999 and two more in 2000. The first two reactors would be a boiling water reactor (BWR) owned by the Tokyo Electric Power Co. (TEPCO) and a pressurized water reactor (PWR) owned by the Kansai Electric Power Co. (KEPCO). Followed by another BWR and PWR respectively, in 2000. Thereafter another five reactors would change to MOX by the early 2000s and a further 7-9 reactors by the year 2010.

In an unprecedented development, on 26 February, Prime Minister Hashimoto met with the three governors to discuss the nuclear fuel cycle policy. This is an indication of the plan's precarious position. The governors stated that the policy needs a national consensus and was therefore the national government's responsibility.

On 27 February, on the basis of CNIC's on-going International MOX Assessment (IMA) project, the Tsuruga City Assembly in Fukui Prefecture rejected as inadequate, explanations of the MOX plan given by STA and MITI representatives. The Assembly also contested claims that MOX use in LWRs is safe. It stated that, for a true consensus the policy must be explained, to the public, more thoroughly.

The three governors' positions vary. The Fukui governor is the most critical. He has expressed the opinion that the consent of the Cabinet is not the consent of the public. The Fukushima Governor is more cautious but takes the position that more discussion, greater public understanding of MOX use and a definite spent fuel policy is needed before he can give his approval. The Niigata Governor has since given his provisional consent for the policy but linked it to economic development of his region.

The government's decision to start implementing its MOX utilization policy, making overseas arrangements and commitments, while there is still no consensus for MOX use in Japan is reprehensible. Fuel fabrication will require the transport of dangerous, weapons-usable material within Europe, and from Europe to Japan, exposing it to the risk of diversion or accident. If the government truly agrees with greater public participation in the decision-making process, it will suspend all fabrication contracts and negotiations for MOX use until a public consensus is reached.

Large Crack Discovered in ABWR Fuel at Kashiwazaki 6

A Crack, Not a "Pinhole"

At a press conference, on 27 January, TEPCO announced that serious damage had occurred in a fuel rod at Kashiwazaki-Kariwa 6 (ABWR, 1,356 MW). Unlike the initial explanation, that last August's fuel rod radiation leak had been caused by the formation of a pinhole in the rod's cladding, TEPCO's press conference announcement said the cause was a crack of over 5 cm. A visual inspection of the fuel rod's surface with a fiberscope revealed an L-shaped crack on the lower portion of the rod's zirconium alloy cladding, and swelling was also found on the opposite side of the cladding from the crack.

Commercial Operation Began Without Investigation

It was around 20 August of last year, when reactor 6 began showing unusual behavior. The exhaust monitor subsequently confirmed that there was a tendency toward slightly elevated radiation readings. On 24th, the concentration of I-131 in the core water was found to be over 400 times greater than normal, which indicated that the fuel rod's cladding had sustained damage. TEPCO therefore began to shut down the reactor manually, bringing to a complete stop on 25 August.

On 2 September, an investigation was started, which, by 19th, located a fuel rod assembly that was leaking radiation. The assembly was replaced without running a detailed investigation into the cause of the leakage, and on 4 October the plant was quickly put into test operation, with commercial operation following on 7 November. At that time TEPCO was probably already to some extent aware that the fuel rod damage was not "very minor." They must at least have suspected as much, and hurried to restart the reactor in an effort to somehow avoid the postponement of commercial operation.

A Flaw Inherent to ABWRs?

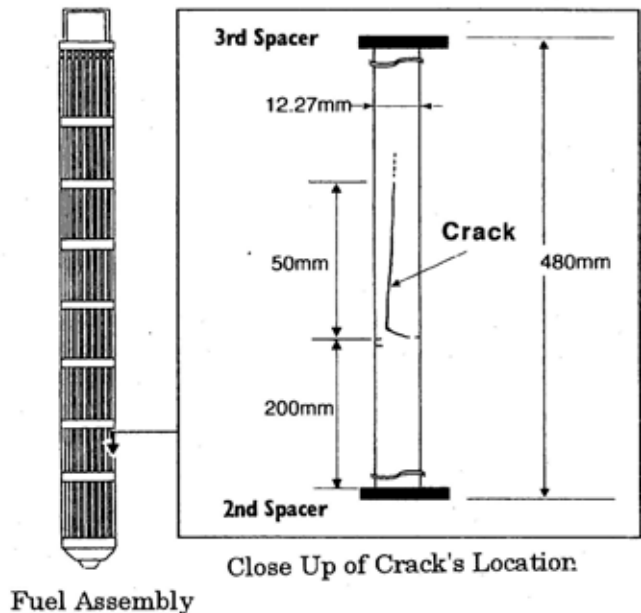
TEPCO explains the crack formation mechanism as, the embrittlement of

the zirconium alloy due to "secondary hydrogenation."

It would seem that there are too many things that cannot be revealed by use of the fiberscope. The images are not very clear anyway and it would be impossible to find something as small as the pinhole that was said to have been the major cause of the leakage.

Owing to ABWR design, the maximum permissible cladding surface temperature is 390 degrees, which is 80 degrees higher than the 310 degrees in BWRs, and the average core power density is 50.6 kW/liter, which is slightly higher than the 50.0 kW/liter of conventional BWRs. Assuming the use of the same high-burnup 8x8 rod configuration, what are the differences between the two fuels that would result in finding damage at the pinhole stage, and after a crack forms? The fact that a crack longer than 5 cm did form in the cladding only six weeks after the start of full-power operation strongly suggests that a design difference is the reason.

Toshiba and Hitachi are trying to sell ABWRs to East Asian countries, but this incident could cast a very dark shadow over these efforts.



Fuel Assembly

Taiwan is Going to Export Radioactive Waste

On 11 January, Taiwan Power Company (Taipower Co.) disclosed that a contract for the storage of low level nuclear waste has been made with North Korea and the shipments will start within half a year. North Korea will store 60,000 barrels of the waste in the next two years.

North Korea will take charge of the low level nuclear waste in 200 liter barrels at a cost of \$1,300 per barrel, possibly expanding the storage capacity to up to 200,000 barrels. It is also suggested that not only the storage but also the final disposal can be carried out in North Korea.

But at this absurdly low price, surely nobody can believe that the nuclear waste will be stored safely. There is no reference in the reports to the definition of "low level" waste, and how it will be treated. The North Koreans say they will use a exhausted coal mine as a storage facility, but this is not storage, it is simply dumping the nuclear waste in the ground and is likely to cause contamination of ground water.

Furthermore, there seems to be no reporting of the issue inside North Korea. Is it possible for an issue such as this, with effects that could last for generations, to be decided upon without anything being announced to the people of North Korea?

In answer to the protests of the South Korean government and environmental groups the Taiwan government only repeatedly answers that, "This is purely a business matter between Taipower Co. and N. Korea." Taiwan is trying to force the dirty work of its nuclear policy on to other countries and their people. It is obvious that nuclear reactors produce radioactive waste. If Taipower cannot take on the responsibility of handling it, they must shut down the reactors immediately.

Japanese nuclear industries also have some responsibility in this issue. In Taiwan there has been strong opposition to Taiwan's fourth nuclear power plant. Last autumn, the Taiwanese Parliament adopted the plan to build the plants despite the opposition of 6,000 demonstrators who surrounded the Parliament building. Three big Japanese companies, Toshiba, Hitachi and Mitsubishi have gotten involved in this project. These companies should reconsider their nuclear

reactor export plan, to the country has such a irresponsible radioactive waste treatment policy, immediately. Also, there have been reports that a certain Japanese company was asked to construct a nuclear waste cargo ship.

Because of the waste policy deadlock, Taiwan and South Korea are likely to sound out other countries in Asia on the plan to construct an international nuclear waste disposal center when they take part in nuclear issue-related international conferences. Together with the idea for "Asiatom," a plan for nuclear cooperation in Asia, which Japan plays a central role in, the region's nuclear policy is fast becoming more dangerous and unclear.

Morality dictates that all nuclear waste should be treated inside the country of origin, and at its own risk. CNIC strongly urges all parties involved in producing nuclear waste to fulfill their responsibility at this time, when international criticism has been leveled against Taipower Co.

(Mika Obayashi)

On 14 February, CNIC and Greenpeace Japan requested that the Taipei Economic & Cultural Representative Office in Japan (the designated representative of the Taiwan-ese government) make public all information concerning the nuclear waste "export" plan. The representatives of both groups also asked, via the Delegation, that the Taiwanese government cancel the plan.

The Secretary Director met with us for about 30 minutes, the meeting was convivial but in answer to our request he only repeated the announcement of the Taiwanese government. The Director discounted the plan to expand the storage capacity of the site to 200,000 barrels, saying, "It is just a rumor, domestic storage is our basic plan."

Anti-Nuke Who's Who: Mr. Ryoichi Sato

The Society Opposed to the Ohma Nuclear Power Plant



Mr. Ryoichi Sato

Mr. Sato Ryoichi, who serves as the deputy representative of the Society Opposed to the Ohma Nuclear Power Plant", became a town council member nearly two years ago in the April 1995 election

in Ohma Town, Aomori Prefecture. Quitting the local forestry office where he had worked for over 40 years, and running as a Social Democratic Party (SDP) candidate, he was the only contestant to run on an anti-nuclear power platform. He was elected thanks to the trust he had cultivated through his work with local labor unions and the citizens' movement, as well as his great popularity among associates.

It was in May 1976, when Sato was running the area labor union office, that the Ohma nuclear plant issue was suddenly thrust upon the community. Immediately he and his associates in the SDP and labor unions formed the Conference for Joint Struggle Against the Ohma Nuclear Plant, into which he put all his efforts.

Sato worked at building his own store of knowledge about the nature of nuclear power, and then attended small citizens' meetings nearly every day, making full use of this new-found knowledge to inform others. While Mr. Sato is not a particularly gifted speaker, his capacity for action and his passion for the movement steadily brought the message into the community, and this was the foundation upon which the

resistance to the reactor plan was built.

The Electric Power Development Co., Ltd. (EPDC) which is in charge of the Ohma nuclear plant project, has changed the type of reactor it intends to build several times during the 20 years of the project, from a CANDU type reactor initially planned, to an Advanced Thermal Reactor (ATR), and now to a full-core MOX-fueled Advanced Boiling Water Reactor (ABWR). The scheduled start of operation has been continually put off. On 18 February it was postponed for the ninth time, an 18-month extension on last year's plan, which puts the scheduled start of operation at October 2006. In another year, it will probably be postponed yet again. Though it seems as if these postponements are due to glitches in the government policy, the biggest reason is the opposition movement.

As part of that local movement the opposition at Ohma has obtained title to part of the land at the planned nuclear plant site, and they are running a "one-tsubo* landowner" movement to take joint possession of the land. The land is divided out in units of one tsubo and sold to as many members of the opposition as possible. This makes it extremely difficult for the utility to buy the land back and helps to unite people in their opposition. Sato himself is one of the landowners and serves as the driving force behind the movement.

He has since expanded his sphere of activity from Aomori Prefecture to Hakodate City in Hokkaido, which lies north across the Tsugaru Strait.

He puts great store in long-time friendships, and he is a bit of a performer who easily creates a sociable atmosphere with a few drinks and his fine singing.

(by Okumoto Masao)

*One tsubo is about 3.3 square meters.

NEWS WATCH

STA Publishes a "Final" Report on Monju Accident

Science and Technology Agency (STA) has been investigating the cause of the sodium leak and fire accident which broke out in December 1995 at Monju (FBR, 280 MW, located in Tsuruga City, Fukui Prefecture) and compiled a "final" report on 20 February. Although claiming to be final," it consists of only 32 pages of text with 35 pages of figures and tables, and is very poor in content.

The report attributes the sodium leak to a break in the tubular portion of the thermometer sheath installed in the pipe at the intermediate heat exchanger outlet of the main secondary coolant system. They explained that due to the flow-tension vibration caused by sodium flow in the pipe, the thermometer and tubular portion suffered high-frequency fatigue, which caused cracking, finally leading to the sheath failing and breaking off. The report concluded that this was caused by an error in the thermometer's design. Up to here the content is the same as in the report STA published in May last year.

The new report devotes a relatively high number of pages (12 pages) to the reason why only one sheath experienced high-frequency fatigue cracking, concluding that the thermocouple sheath in the thermometer sheath was crooked when installed. This analysis is a facile explanation, and not at all convincing. The report itself states that "the analysis does not mean to conclude that the sheaths that were not damaged, function adequately as they were."

The report also devotes nine pages to explaining the reason why five holes formed

in the steel floor liner, during an experimental re-enactment of the sodium leak that was carried out in June 1996. The reason given was that conditions during the experiment were different from those of the actual Monju accident. This explanation clearly shows that they were making no effort to learn anything from the accident. This report is anything but final. It concludes, by means of their convenient supposition, that there were no fundamental design problems.

A Boycott Campaign of 3 Big Nuclear Companies

A campaign to boycott the products of Hitachi, Toshiba and Mitsubishi Heavy Industries began in February. These Japanese companies construct nuclear reactors, and intend to export reactors to Asian countries. The campaign, initiated by the Japan Consumers Association, is calling for people to join the boycott under their banner of "Kawan Sign." The campaign is being carried out by various means such as mail, fax, and internet homepages.

"Kawan" means "not to buy" in Japanese as well as "friends" in Indonesian. The campaign is meant to encourage people not to buy the products of reactor exporting companies in order to stop the export and foster friendship among Asian people.

The Akihabara area in Tokyo and the Nihonbashi area in Osaka are crammed with electrical and electronic goods stores that stock these companies' goods so these areas were targeted for a leaflet campaign. In Taiwan a campaign to boycott the products of these companies, and General Electric of the United States, has been rigorously pursued.

Kyushu Electric to Review Nuclear Plan at Kushima

Kyushu Electric Co. announced, on 11 March, that it would undertake a thorough reconsideration of the planned construction of a nuclear plant in Kushima City, Miyazaki Prefecture. The representatives of the utility, including a vice-president, Michisada Kamata, visited the mayor, Shigeru Yamashita, to inform him of this.

A referendum was scheduled in the city to question pros and cons of the plan. This announcement is widely considered to be a ploy to undermine the referendum by reducing the apparent necessity of holding it, making it seem less important to the citizens of Kushima and thus avoiding the possibility of having to face an overwhelming "No" vote as happened in Maki, Niigata Prefecture in August 1996.

"To reconsider" the plan for Kushima as one of the candidate sites, and not "to abandon" the plan, however, does not justify cancelling the referendum. The mayor has stated that, "Regardless of the change in the situation, the city will conduct the referendum as scheduled," and preparations to that effect, are underway.

International Conference on Asian Nuclear Cooperation

The 8th International Conference for Nuclear Cooperation in Asia, which Japan's Atomic Energy Commission (AEC) has been holding annually since 1990, was held this year from 4-6 March 1997, in Tokyo. The participating countries were Japan, Australia, China, Indonesia, South Korea, Malaysia, Philippines, Thailand and Vietnam.

At the nation by nation presentation, the delegation from Philippines announced that it proposes to start operating a 2,400 MW nuclear power plant by 2025. During the question and answer session, the observers' interests were focused on Chinese and Korean nuclear fuel cycle policies. South Korea said it has no concrete plan at the moment, but would like to decide its policy after watching the reprocessing policies of France, Germany and other countries. China said it is close to starting construction of a 60MW FBR in cooperation with Russia.

The conference was held shortly after the Indonesian government passed a controversial nuclear bill, but Indonesia had not given the exact timetable for the construction of the nuclear power plants. It proposed a plan for financing nuclear power plant construction, and urged international cooperation on nuclear development. Indonesia, however, put back the plan to operate its first nuclear power plant, from 2003 until 2020 or 2030, on 11 March 1997. Some critical environmentalists say it is just a smoke screen for the election which will be held this year. The Taiwanese government's plan, to export nuclear waste to North Korea, was also highlighted. The South Korean government urged inter-national cooperation to oppose the plan, but a Japanese chairman said it was a sensitive issue because of the transportation of Japanese VHLW that was going on at the time.

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