
NUKE INFO TOKYO

Mar./Apr. 1989

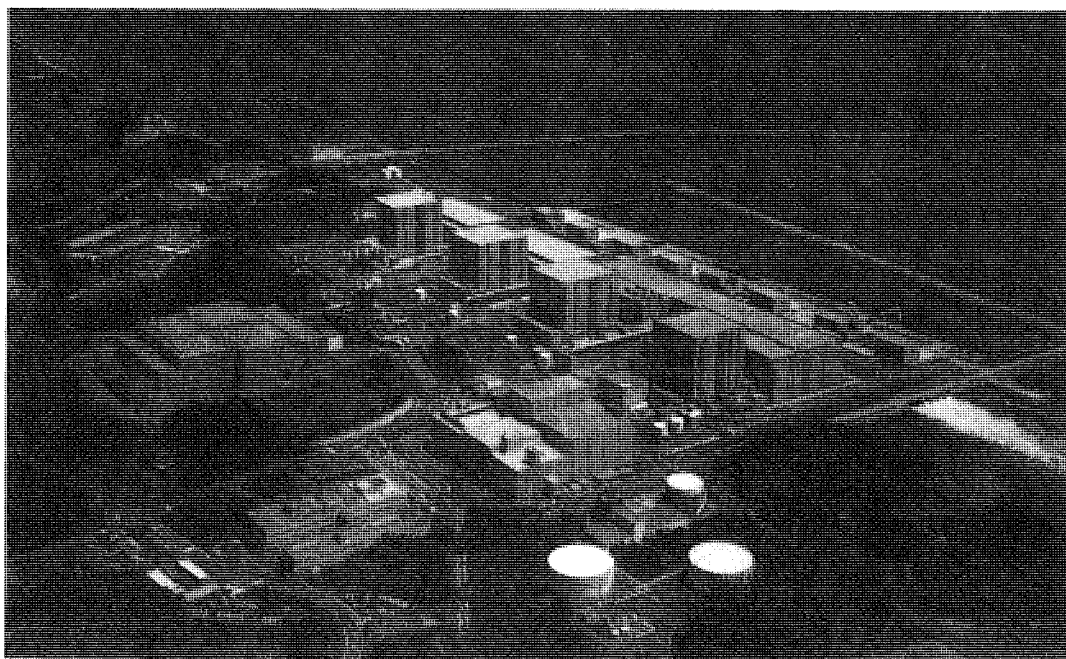
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Pump Rupture at Fukushima II Arouses Serious Safety Concern



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Following rumors that something serious had happened to one of the recirculation pumps at Fukushima II unit 3 plant (1,100 MW BWR), Tokyo Electric Power Company (TEPCO) held a press conference on Feb. 3 and admitted that the pump's inner components had actually sustained heavy damage on Jan. 6.

Earlier, TEPCO had only reported that the reactor was brought to a halt manually due to the abnormal vibrations of the recirculation pump

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(see NIT No.9). At the Feb. 3 conference, it was disclosed that a 100kg ring attached to the bearing of the pump had become dislocated and damaged the vanes of the pump. Also two metal pieces were missing and might have found their way into the reactor core.

By the beginning of March, however, it had become quite obvious that the damage was far more serious than reported on Feb. 3. TEPCO's investigation has already discovered 10 fragments and some metallic powder at the bottom of the reactor vessel and 13 fragments inside the jet pump. Metal pieces were also observed on 122 of the 764 fuel assemblies. The largest fragment is 10.5cm long and weighs 9 grams.

It is the first time in Japan that such a large number of foreign objects have been discovered in a reactor vessel, and the accident has aroused intense public concern, especially among local residents. Quite exceptionally, heads of local communities around the plant have expressed anxiety over TEPCO's attitude to reactor safety. When the first alarm sounded on the morning of Jan. 6, signalling abnormal vibration of the pump, the operators only reduced the rotational speed of the pump and kept it operating for another 14 hours with the alarm sounding most of the time. If the pump had been stopped immediately, the rupture could have been prevented.

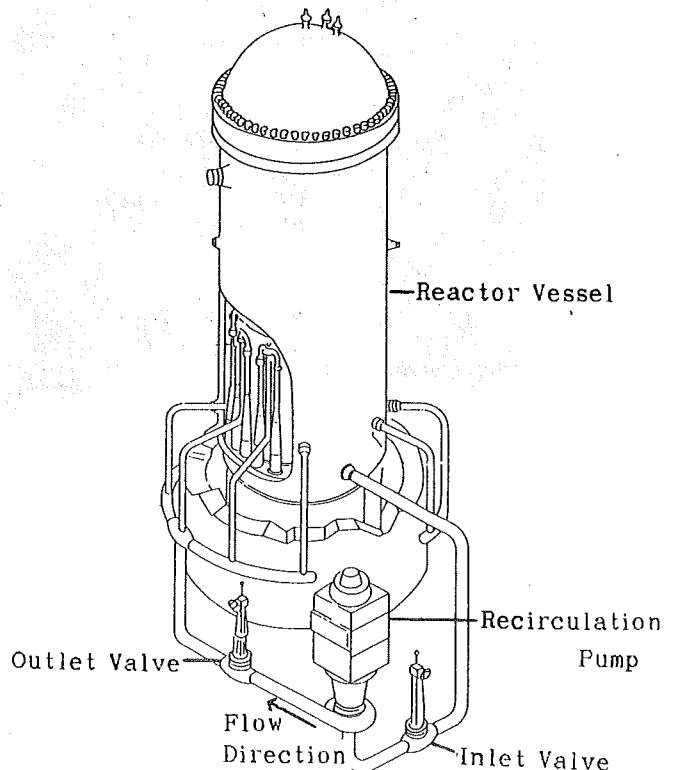
On the other hand, if the pump had been kept operating a little longer, the pump's casing and/or connected pipings might have fractured, leading to a LOCA (loss of coolant accident). A LOCA through such a large fracture could well cause the core to melt down. Also, metal fragments penetrating to the core could have caused serious fuel rod damage.

TEPCO has come in for a storm of public criticism. Even the Nuclear Safety Commission has said it should have shut down the reactor on Jan. 1, when the same pump showed the first symptoms of abnormal

vibration. At that time the operators responded to the alarm by reducing the pump's rotational speed by 3%.

TEPCO still has to examine the reactor vessel thoroughly with an underwater camera and inspect the entire plant system including all the 48,132 fuel rods. It is expected to be at least 6 months before the plant can restart. Kashiwazaki-Kariwa I, Tokai II, and Fukushima I-6, which are equipped with a similar recirculation pump, are to be shut down for replacement of the bearing which failed in Fukushima. It is highly questionable, however, that the replacement of the bearing with a new one with improved welding will be sufficient to prevent the accident happening again, because the exact causes of the rupture have still to be ascertained. □

Reactor Vessel and Recirculation Pump



Nuclear Plant Workers Show Higher Risk of Chromosome Damage

According to a study published in January, workers in nuclear power plants have double the normal level of chromosome abnormalities. The study, which has received wide attention, was conducted by Dr. J. Muramoto at the environmental medicine research institute in Fukushima prefecture where Fukushima I & II nuclear power plants are located.

All the 115 workers examined at Fukushima I & II were men, aged from 20 to 61. Length of employment ranged from 4 months to 12 years. Cumulative exposure levels, measured by filmbadges, were as follows.

Less than 1 rem 10%
 1 to 5 rems 44%
 5 to 10 rems 33%
 More than 10 rems 12%

The highest exposure level was 14.3 rems.

A total 93,505 lymphocyte cells from the blood of these workers were analyzed for chromosome abnormalities, which frequently result from radiation exposure. It was found that the incidence of chromosomes with two chromomeres and ring-shaped chromosomes was 0.22% compared to 0.12% among local residents. It was also shown that the number of abnormally shaped chromosomes was proportionate to the level of radiation exposure. (see chart)

The Science & Technology Agency, and Tokyo Electric Power Company, which operates these reactors, are trying to play the incident down, claiming that the two types of abnormal chromosomes die without spreading, and therefore do no harm.

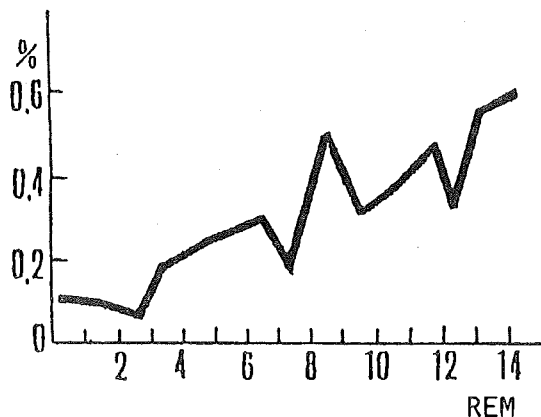
It is believed, however, that the existence of these abnormal chromosomes indicates the presence of other abnormalities such as point mutations, which would lead to

cancer or genetic illness. Furthermore the average age of the local people is higher than the nuclear workers and the incidence of abnormalities among local people may be higher than the national average. Hence, the level of abnormalities among the nuclear workers could be much higher than average.

At the moment some 50,000 people work at nuclear power plants every year. The total number of nuclear workers registered up to March, 1987 is 211,114. There is an urgent need to conduct a survey of the incidence of illness and death among these workers in proportion to the number of rems of exposure.

The Fukushima Survey is not sufficiently extensive or clear, but it is the first of its kind and quite significant, since electricity companies have nearly always refused to cooperate with any study or survey of this kind. □

INCIDENCE OF CHROMOSOME
ABERRATIONS VS.
CUMULATIVE DOSE



Citizens Set up Monitoring Centers for Contaminated Foods

New attempts are being made to set up a monitoring center for radiation contamination in imported foods.

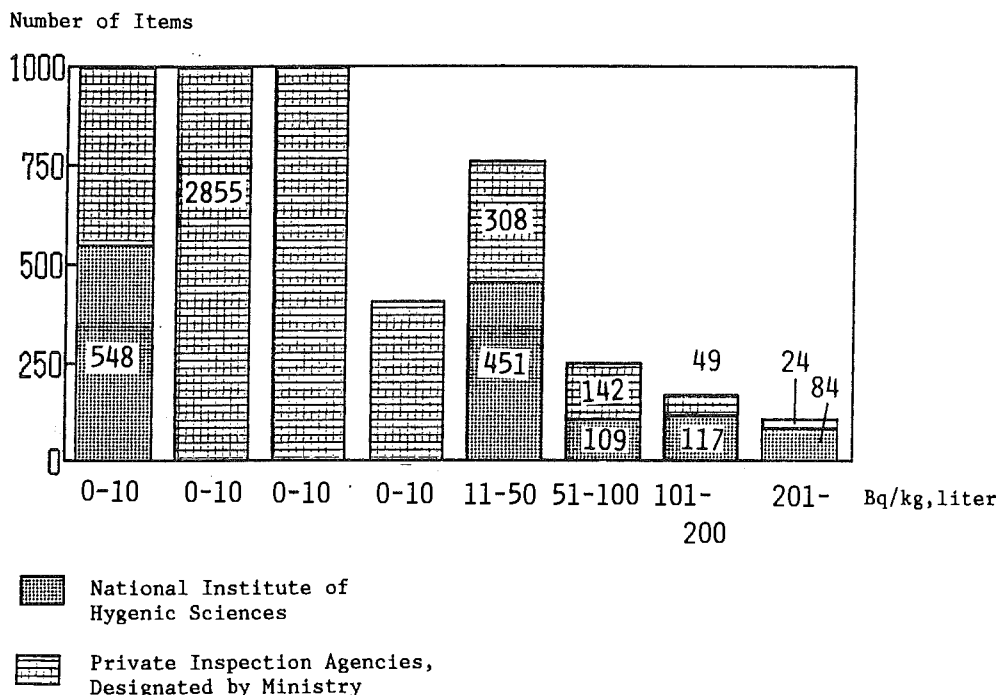
The Ministry of Health & Welfare is supposed to be in charge of food safety and people's health, but their inspection system for imported foods is far from effective and the permissible level of radiation has been kept at the high level of 370Bq/kg(liter). The Ministry has released very little information regarding contaminated food items with radiation levels less than 370Bq, and refuses to specify the names or the producers of such items. This is no help at all to

consumers trying to find uncontaminated food items.

More and more people are now putting pressure on local assemblies to purchase radiation counters or trying to set up monitoring centers on their own.

In the autumn of 1987 concerned citizens collected donations and set up a monitoring center, the "Citizens' Measurement Center for Contaminated Foods" for the first time. They have received quite a number of requests for monitoring and telephone inquiries from all over Japan. Their activities have prompted some food importers and producers to purchase their own radiation coun-

CONTAMINATION DISTRIBUTION OF IMPORTED FOODS



ters and monitor the food items they handle. People are so concerned about contaminated foods that corporations handling food items have now been put in a position where they also need to keep an eye on radiation contamination.

In several cities and prefectures consumer groups and concerned women have managed to have local assemblies set up monitoring centers. Discussion now centers on what kind of monitoring system they should set up, what kind of counter to purchase, how to run the center, and how to make the data available to the public.

In Fujisawa city, monitoring will start in April. It was two years ago that concerned people in the city started to campaign for a monitoring center. More and more people became involved and had a series of meetings. As a result the

city has agreed to remain a supportive body and to let citizens themselves be responsible for the whole operation including monitoring and data release. Fujisawa will be a good model of a city-sponsored monitoring center.

Groups such as "Environmental Watch Institute" in Osaka and "No Nuke Plaza" in Tokyo have also purchased radiation counters.

Three years have passed since the Chernobyl accident and radioactive contamination is still spreading in the environment. Other items besides foods, such as peat moss from heavily contaminated areas in Europe and feed for domestic animals have now been found to be contaminated. It is very important, therefore, for concerned citizens to continue their monitoring efforts and stay on top of the situation. □

IMPORTED FOODS CONTAMINATED ABOVE REGULATION LEVEL*

date	food	producer	Cs. content (Bq/kg)
Sep. 28 1988	mushrooms	France	707
Sep. 28 1988	mushrooms	France	446
Oct. 5 1988	spices	France	432
Oct. 5 1988	mushrooms	France	562-458
Dec. 2 1988	herb tea	Switzerland (exporter)	579
Dec. 28 1988	bay leaves	Spain	1,325
Jan. 11 1989	mushrooms	France	650
Jan. 23 1989	dried flowering fern	USSR	655

* 370 Bq/kg or liter

Former Mining Sites at Ningyotoge Pose Danger

The area around Ningyotoge, on the border between Okayama and Tottori prefectures, is well known because it is the first place in Japan where uranium was mined. Nearby there is now a test plant operated by the Power Reactor and Nuclear Fuel Development Corporation (PNC) for uranium enrichment, refinement, and conversion.

Uranium was mined at Ningyotoge beginning in the latter half of the 1950s for about ten years by the Nuclear Fuel Corporation, which was PNC's predecessor. Last August, however, it was discovered that great quantities of uranium tailings had been left exposed at the site of the former mines, and local citizens have begun a movement demanding that these uranium tailings, which are radioactive wastes, be removed.

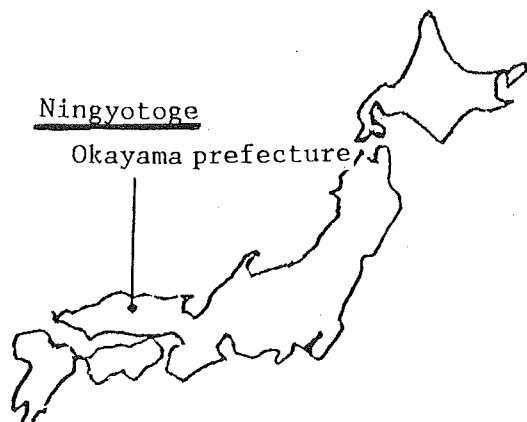
There is a total of about 200,000 cubic meters of uranium tailings at the three mines in the vicinity of Ningyotoge: The Ningyotoge Mine, the Togo Mine, and the Kurayoshi Mine. This corresponds to the quantity stored in about one million 200-liter drums, and is twice the 500,000-drum cumulative total of low-level nuclear wastes produced thus far by all of Japan's nuclear power plants.

Since the uranium tailings contain a radioactivity comparable to that of the low-level radioactive wastes from the nuclear power plant, the ground level gamma radiation is, at its highest location, as high as 0.68 mR per hour, which corresponds to an annual exposure of 6,000 millirems. This amount is 60 times greater than the maximum permissible annual dose for the general public, which was changed and goes into effect this April.

However, the trouble with uranium tailings is that the danger cannot be measured by gamma radiation alone. The reason is that, as they contain such substances as uranium 238, with a half-life of 4.5 billion years, as well as the even more poisonous radium 226, with a half-life of 1,600 years, the tailings will continue on a semipermanent basis to contaminate the environment and agricultural produce in the vicinity of the mines.

As a matter of fact, the radioactive contamination of soil, water, plants, and rice near the mines has been confirmed. Samples were collected by members of a citizens' anti-nuclear power group, and analyzed by Mr. Koide Hiroaki of the Research Reactor Institute, Kyoto University.

Uranium series nuclides were found in rice stalk bundles and unhulled rice taken from rice paddies in the Katamo area near the Togo Mine, located in the Town of Togo, Tohaku county, Tottori Prefecture. In view of the fact that rice is a staple food in Japan, this is a shocking revelation.



Katamo is an area well-known for its production of Japanese pears. Katamo residents, who fear the contamination of the pears, demand "the complete removal of the uranium tailings." They also want the uranium mine site immediately above their village "to be returned to us in its original uncontaminated state."

In addition to concern over the environmental contamination by the uranium tailings, there are also great worries about the radon exposure of the people who used to work in the uranium mines. A total of 3,000 people worked at the three mines near Ningyotoge, and 1,000 of them actually worked inside the shafts.

According to Nuclear Fuel Corporation data, the 1957 radon concentration in the shaft at the Ningyotoge Mine in the Yotsugi area was a maximum of 100,000 pCi per liter of air, an abnormally high value. Expressed in WL units ("working level"; 1 WL is equal to 100 pCi/liter), this represents 1,000 WL.

Since the maximum allowable radon concentration for personnel according to ICRP Publication 2 is 0.1 WL, the above concentration is an incredible 10,000 times this value. Based upon the radon exposure risk assessment of America's Dr. John Gofman, in which a 25-year-old male dies of lung cancer due to an exposure of 388 WLM ("working level month"; one month equals 170 hours), the 1,000 WL value for the Yotsugi area speaks of a truly appalling work environment where a person will die of lung cancer one way or the other having worked there for two weeks.

According to the calculations of Mr. Koide Hiroaki, even a conservative estimate concerning the 1,000 people who worked in the three Ningyotoge mines yields 65 cancer deaths.

Japan must now rely on the uranium resources of other countries because, in the final analysis, the uranium from Ningyotoge was of such

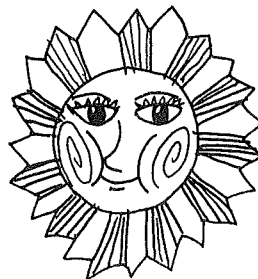
a low grade as to be totally useless. Yet, even the useless mines at Ningyotoge caused the aforementioned environmental contamination and health damage. This reminds us once again of the large-scale contamination and serious radiation exposure in the uranium mines of places such as North America, Australia, South Africa, and Namibia. □



Uranium Mine Tailings Seen in the Back

Protest against U-Imports from Namibia

Protest actions against uranium imports from Namibia by Japanese electricity companies were taken on March 22 in several countries simultaneously. Here in Japan, protesters gathered in Osaka and in Tokyo, and demanded that Kansai and Tokyo Electric Power Companies stop importing uranium from Namibia. About one hundred people in Osaka and fifty people in Tokyo told companies they would boycott electricity for one day in protest.



ANTI-NUKE GROUPS

ACTIVE AROUND JAPAN

Group Merde

"Merde" is a group of 4 women and 8 men with various occupations. Our first activity was a film and lecture meeting entitled "What are Nuclear Power Plants?" It was held on May 17, 1986, right after Chernobyl, as we were very shocked at the disastrous repercussions of the accident. We decided to form an educational group called "Phone Delivery Lecturers." This is a system to give free lectures to any group of people who wants to know about nuclear power.

In this process, we felt the need to re-educate ourselves, to read, study, and discuss the issues. We gathered at my house on a regular basis for this purpose, and then had a drink afterwards, which kept the group together and kept up our energy level.

We have issued five newsletters so far and held several open lectures to inform the public. We have also travelled to Tokyo to participate in major anti-nuke rallies, since we are located only 150km to the north of the city. On Jan. 22 of this year, when the Nuclear Power Phase-out Law signature drive took off in one of the busiest areas in Tokyo, we took hundreds of flowers with us and distributed them to passers-by, hoping to leave them with a good impression of the movement. We started our own signature drive in Gunma prefecture in February.

In October '87 we formed another group called "Citizens to Reject Nuclear Fall-Out" which now has 170 members. These two groups together participated in the Nuclear Fuel Transport Watch Network and followed fuel transport trucks.

We are planning to hold a

"Nuclear Power Phase-Out Poster Exhibition" this coming June in Kiryu City. The theme is "We don't need Nuclear Power."

Anybody is welcome to take part in the exhibition with paintings, sculpture, poetry, etc. The pictures don't have to be framed. It is not a competition, so there are no judges, no prizes, and no fee. Anyone interested should contact us at the address below between April 1 and May 20. This exhibition is supported solely by donations from the public and ourselves.



As you can see from our activities, each of our members tries to introduce new creative ideas, and we fully enjoy ourselves in whatever we do, which makes the group very energetic and fun to be in. We believe this is the only way to sustain activities in the long term. And we believe this kind of activity is a step towards stopping all nuclear power plants. Not only for ourselves but for all our children who will live after us.

Kosaku Abe



Rokkasho Permit Application Submitted

Japan Nuclear Fuel Service Co. (JNFS) submitted applications on March 30 for a construction permit for the planned commercial reprocessing plant and high-level nuclear waste storage facility at Rokkasho, Aomori Prefecture. It was supposed to have been filed last fall, but JNFS, the contractor, has had some serious problems.

Last October an internal document, admitting the poor geographical conditions of the site, was leaked. Then, early this year, Mitsubishi Heavy Industries (MHI), which is designing the plant, demanded a review of the construction cost. The current estimate is ¥840 billion, but the plant is expected to cost over ¥1 trillion, and MHI wants a thorough reassessment.

Onagawa Permit Granted

The Minister of International Trade and Industry, Hiroshi Mitsuzuka, on February 28, granted Tohoku Electric Power Co. a permit to construct Onagawa No.2 reactor (BWR, 825 MW). It is scheduled to be the 49th commercial reactor to be operated in Japan.

Meanwhile, on February 22, Chubu Electric began construction of the No.4 reactor (BWR, 1,137 MW) at its Hamaoka plant. If everything

proceeds smoothly it will be the 46th commercial reactor to come on line.

Shimane Unit 2 on Lite

Unit 2 of Shimane nuclear plant (BWR, 8,200 KW), owned by Chugoku Electric Power Co., went into commercial operation on February 10. This brings the total number of reactors operating in Japan to 37, including 36 commercial plants (287,010 KW) and one prototype advanced thermal reactor (1,650 KW).

Lawsuit to Scrap Mutsu

Eight residents of Mutsu city, Aomori prefecture, filed a lawsuit on February 27 seeking to stop the experimental voyage of Japan's first and only nuclear powered ship, the Mutsu, and have the ship scrapped. (See NIT No. for details)

In preparation for the voyage, the Japan Atomic Energy Research Institute (JAERI) is conducting a check-up of the fuel, which has not been used since 1974 when the ship developed a radiation leak during its test voyage. JAERI announced on January 24 that many of the control and fuel rod parts in the reactor had corroded, and that one fuel rod and four control rods had developed pinholes.

Chubu Electric to Purchase Uranium from U.S. and Canada

Chubu Electric Power Co., on February 10, signed a contract with the Canadian Mining and Energy Corp. to buy 2,700 short-tons of uranium ore concentrate (U_3O_8) between 1992 and 2000. It also signed contracts to purchase 500 short-tons each from Chevron U.S.A., Inc. and Malapai Resources Co. over a 10-year period starting in 1990. Apart from these contracts, Chubu plans to purchase an additional 3,000 short-tons of uranium before the turn of the century.

SDF to Guard Plutonium-Shipments?

From 1992 it is planned to transport reprocessed plutonium from France and England to Japan. A controversy has arisen, however, as to who should guard such shipments, the Maritime Security Board or the Maritime Self-Defense Forces. At the Standing Committee on the budget on February 17, Foreign Minister Uno said that even if the SDF was to guard the ship, it would not be considered as "deploying troops abroad." Prime Minister Takeshita,

however, said that he hasn't really made up his mind.

The Maritime Security Board is charged with maintaining security in coastal waters. Guarding plutonium transport ships was never envisaged as part of its role. Meanwhile, the Japanese constitution, the SDF Law and an Upper House resolution prohibit the deployment of the SDF abroad. It will not be easy to choose either of these two bodies, therefore, without contravening the law.

Japan, Taiwan Agree to Swap N-Power Info

The Japan Atomic Industrial Forum (JAIF), on February 20, signed an agreement with the Taiwan Society of Nuclear Power. The accord, entitled "a Memorandum on Measures to Improve the Safety of Nuclear Facilities," calls for general information exchange on nuclear power, mutual notification in the earliest stages of a nuclear accident, and cooperation in the event of an emergency. The accord will be effective for three years.

4 BWR reactors and 2 PWRs are now operating in Taiwan but there is strong opposition to the planned construction of a 7th reactor, the Yenliao plant. □

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NUKE INFO TOKYO is a bi-monthly newsletter which aims to provide foreign friends with up-to-date information on the Japanese nuclear industry, as well as on the movements against this industry in Japan. Please write to us for subscription (subscription rate: supporting subscriber \$40/year, subscriber \$20/year). We would also appreciate receiving information and newsletters from groups abroad in exchange for this newsletter.

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