

# NUKE INFO TOKYO

July/Aug. 1994

No.42

c/o Citizens' Nuclear Information Center

302 Daini Take Bldg., 1-59-14 Higashi-nakano, Nakano-ku, Tokyo 164 JAPAN

Phone:81-3-5330-9520, Fax:81-3-5330-9530

## AOMORI INTERNATIONAL SYMPOSIUM ON REPROCESSING HELD



(Photos by K. Shimada)

### IN THIS ISSUE

HLW Transport Series 4	4
'Use of N-Weapons' not illegal?!	6
Significant Incidents at N-plants	7
Anti-Nuke Who's Who	8
NEWS WATCH	9
Compensation Approved for N-worker/ Japanese Reactors are Aging/ Troubles Found Outside of Regular Inspections/First SG Exchanges Completed/N-cooperation in Asia/ Long-Term Program Ignoring Citizens' Demand	

On the 26th of June, CNIC held the Aomori International Symposium on Reprocessing in Aomori City. Five speakers from the U.K., Belgium, Germany, Japan, including the Landrat from Wackersdorf, Germany came to give lectures and discuss recent issues related to reprocessing in Europe and Japan.

Originally, this symposium was planned as the follow up to "Why Plutonium Now?," which was held in junction with the Japan Atomic Industrial Forum (JAIF)

last year in Osaka. At that time, local newspapers of Fukui and Aomori all expressed in their editorials that the next symposium should be held in their local prefectures.

CNIC held talks with JAIF concerning the possibility of a joint follow up symposium. However, due to pressure from the Aomori local government and Japan Nuclear Fuels, Ltd. (JNFL), the reprocessing plant owner, such negotiations became difficult. As a gubernatorial election is scheduled the following year, the Aomori prefectural government and the JNFL seemed to be very reluctant to 'arouse new debate on reprocessing issues.'

As a result, the symposium was held solely by CNIC. However, just days prior to the symposium, officials from the Science & Technology Agency (STA) sent notification that they would be willing to participate in the symposium. Directors from Nuclear Fuel Division and Office of Nuclear Fuel Cycle Backend Policy attended the symposium to talk briefly on the government's recently announced Long-Term Program, as well as take questions from the floor.

The main focus of the symposium was to explain how the reprocessing option and plutonium utilization has become out of date internationally. The first speaker, Frans Berkhout, Ph.D. of Sussex University, U.K. refuted all the rationales given by the nuclear industry for reprocessing; i.e. energy security, as an alternative fuel management

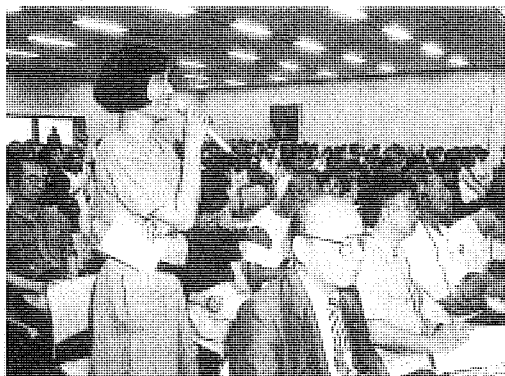
option, and waste management strategy. Berkhout concluded by affirming, "None of the assumed economic, strategic or environmental benefits of reprocessing are persuasive today."

The second speaker was Michael Sailer of the Öko Institut of Germany. He spoke about recent developments in Germany concerning the revision of the Atomic Act, the abandonment of the plutonium utilization policy. Under the new Act, the utility companies have the option to dispose spent nuclear fuel directly without reprocessing. As a consequence, standing contracts they made with Cogema of France and BNFL of U.K. may be aborted.

Professor T. Hirai of Meijo University, Japan spoke on "the Economics of the Rokkashomura Reprocessing Plant." However, much of his discussion had to be limited as estimating unit costs of reprocessing in ¥ millions/ton HM or ¥/KWH was impossible - due to government policy of keeping confidential all data on costs necessary to clarify the economics of plutonium-related projects such as Rokkashomura Reprocessing Plant and FBR Monju.

Nevertheless, based on the total construction costs officially recorded at ¥840 billion although some reports conclude higher figures of ¥1.7 trillion and assumed labour costs, Hirai calculated the reprocessing cost to be ¥250 million/ton HM. This figure was shown to be higher than BNFL's ¥195.3 million and Cogema's ¥232.5 million estimations.

Prior to the end of the morning session, STA officials lectured on the government's Long-Term Program announced on June 24th. Moriguchi of the Nuclear Fuel Division talked about this plutonium program, stressing that plutonium policy is essential for Japan's energy independency for future generations. Kuramochi of the Office of Nuclear Fuel Cycle Backend Policy (storage & disposal of radioactive-waste) explained the waste disposal program, focusing on the return of vitrified



high level waste.

Both Moriguchi and Kuramochi took questions from the floor. When asked by an Aomori resident for disclosure of documents in Aomori Prefecture, in addition to those prepared in Tokyo, which are related to Aomori Nuclear Fuel Cycle facilities, Moriguchi promised to look into the matter.

Many people wanted to ask questions, but were declined due to lack of time. The STA officials left after the morning session.

Jan Michiels of S.E.V.I. of Belgium spoke first in the afternoon session on the "Belgium Nuclear Fuel Cycle Backend Policy Regarding MOX." Michiels has been involved in the recent Parliamentary debate on the option of reprocessing and recycling plutonium in Belgium. To this end, Michiels prepared the background papers and resolutions used by the Social Democratic Party. Belgium Parliament made a decision in the end of 1993 to maintain the reprocessing contracts made in the 1970s, and recycle the plutonium extracted as MOX fuels in LWRs. However the parliament consented to a freeze on contracts bound in 1990 and a new evaluation on the backend policy to be carried out within five years.

Jinzaburo Takagi, Ph.D., executive director of CNIC, spoke about the return of waste from overseas reprocessing contracts. According to Takagi the French reprocessor Cogema will start sending back vitrified high level waste beginning February 1995. Although the first shipment will be small, calculating from the total contracted amount, a total of 3,000 to 5,000 vitrified HLW canisters will be sent back, which would mean 30 to 60 shipments in ten years, Takagi explained.

Takagi went on to state that not only HLW, but low and intermediate waste will be sent back as well, and calculating from the figures of Cogema and BNFL, there will be about 50 - 150 shipments of LWR drums.

Continuing, Takagi expressed that



Rokkashomura Former Mayor,  
Mr. Terashita (left)

plutonium shipments will take place more than 20 times, emphasizing that if the enormous amount of recovered uranium is to be sent back as planned, there would be, on the whole, as much as one shipment every week of radioactive materials from Europe to Japan in the next ten years. Takagi concluded on the recommendation that if such situation is the consequence of the reprocessing policy, the Japanese government should release all information and data regarding these materials to be returned, and should conduct a full environmental assessment on all of the shipments.

Hans Schuierer, guest speaker from Wackersdorf, Germany explained how German citizens succeeded in stopping the reprocessing plant built near their community, Schuierer encouraged the people of Aomori that reprocessing project could be halted even after the plant is constructed.

There were more than 500 participants at the symposium from all over Japan from Hokkaido to Kyushuu, and even some from overseas. It was widely covered by all the local papers and television broadcast stations, as well as some national newspapers.

After the symposium, the speakers took a specially planned bus tour of the Rokkashomura fuel cycle facilities, met the mayor of the village, participated in several meetings held in various cities in the prefecture, sharing words of encouragement and praise for the peoples' anti-nuke movements.

## HLW TRANSPORT -- Series No. 4

Although FEPCO (Federation of Electric Power Companies) has stated its preparedness to make public all information relevant to the safety of HLW transport, detailed data on the radioactive contents as well as physical and chemical characteristics (the so-called "specifications") of the vitrified HLW have not been published to date, nor does it seem likely that FEPCO should do so before the first shipment takes place.

In view of the importance of the specification data being published and made available to public scrutiny for safety review, CNIC has been making dire efforts to access as much and as accurate information as possible. The following is the brief summary of the yet-unpublished specification data which we have obtained from our own sources to date. After acquiring some information on the specifications and quality control of the vitrified HLW, CNIC feels increasingly concerned rather than relieved about the safety of shipment and storage/disposal of HLW.

### SPECIFICATIONS FOR VITRIFIED HLW

The following are some of the important specifications of the vitrified HLW produced by COGEMA for shipment to Japan.

#### Specifications per canister

Chemical composition: borosilicate glass composed mainly of oxides of Si, B, Al, Na, etc. and containing 10-15% of oxides of radioactive nuclides (fission products and actinides).

Total canister weight: 492 kg. Glass weight: 413 kg.

Radioactive content: total beta activity: max.  $28 \times 10^{16}$  Bq, Cs-137:  $6.7 \times 10^{15}$ ;

Sr-90:  $4.6 \times 10^{15}$ , total alpha activity: max.  $1.4 \times 10^{14}$  Bq.

Uranium content: max. 4.5 kg.

Plutonium content: 110 g.

Americium content: 500 g; Am-241 activity:  $4 \times 10^{13}$ .

Curium content: 90 g; Cm-244 activity:  $1 \times 10^{14}$  Bq.

Radiation level: Gamma: surface: 14,000 Sv/h; at 1m: 420 Sv/h; at 2m: 140 Sv/h, Neutron: surface: 120 mSv/h; at 1m: 16 mSv/h; at 2m: 8 mSv/h.

Heat generation: 2 kW.

Significant temperature values: av. transition temp.: 502 C; deformation temp.: 546 C, crystallization temp.: 610-800 C; liquefaction temp.: 1160 C.

### DUBIOUS APPROVAL OF SPECIFICATIONS?

According to FEPCO, the detailed specifications given by COGEMA for the HLW to be transported have already received consent from Japanese utilities and have been approved by the Japanese government in accordance with procedures provided for in the reprocessing contract. However there is no legislation under Japanese nuclear law systems which provides for legal procedures for the approval of such specifications. Further, in reality, it appears that the utilities and government have accepted all the specifications as presented by COGEMA without any safety review.

This acceptance of specifications without any official licensing procedure arouses grave safety concerns. For example, the transition and deformation temperatures of glass as given by COGEMA is only slightly above 500 C, which seems to be very near to the actual temperature at the center of a canister. Thus, it can not be ruled out that serious deterioration of glass which could lead to release of radioactivity might occur during

shipment and post-transportation storage. Therefore, the adequacy of the temperature specifications which is highly questionable from the safety viewpoint as well as many other technical issues should be addressed before the specifications are accepted.

### WHO CAN CHECK THE QUALITY OF GLASS AND CANISTER?

Of more importance than the question of adequacy of specifications is the fact that there is no assurance that the actual vitrification and encapsulation into the canister can be done strictly in accordance with the specifications. Based on the specification report by COGEMA, the quality control of vitrification is done in accordance with the Quality Assurance Procedure Manual. The manual is, however, kept secret even to customers for commercial secrecy reasons. Thus, nobody on the customer side can check whether the quality of HLW glass and canister is adequately controlled and protected according to the manual stipulations. This is particularly controversial because the HLW will be stored and finally disposed of in customer countries such as Japan. To this end, extremely long term stability and integrity of the glass and canister is required.

In order to legitimize COGEMA's self-complacent quality assurance, the French government has commissioned a private company called Bureau Veritas to conduct quality control of the vitrification process. However, as the company has some affiliation with COGEMA, whether or not a purely independent inspection and control assessment will actually be conducted is open to question. Further, information available to date suggests that Bureau Veritas has little experience in inspection of radiochemical processing and lacks formidable competence to guarantee the quality of vitrified HLW.

Moreover, even if the quality control by Bureau Veritas is adequately conducted, such procedures can only guarantee the process. The quality specifications of glass relevant to safety such as physical characteristics of glass, homogeneity of radioactivity distribution and integrity of canisters can only be inspected by repeated destruction tests on actual samples. However, COGEMA has only tested two specimens among the more than two thousand vitrified HLW they have produced.

### HOW CAN THE SAFETY OF TRANSPORTATION BE ASSURED ?

As in the case of plutonium shipment, the only official regulation for the safety of HLW transportation is the IAEA standards on the transportation cask. According to the standards, the cask (TN28) should retain its integrity (leak-tightness) after having been subjected to the following three test criteria:

- (1) Fire condition: 30 minute at 800 C.
- (2) Immersion: 8 hours at 15 meters water depth.
- (3) Mechanical shock: dropping from 8 meters height to a flat surface.

It may be almost self-evident that these criteria are far from situations in which the HLW cargo might be subjected in a maximum credible accident condition during its 15,000 nautical mile voyage (the ship is considered to pass through the Panama canal). A ship fire could last for hours at temperatures well above 1,000 C; a sunken vessel could yield cask immersion to water depths of several thousand meters or more; a ship collision could produce a shock far greater than that prescribed above.

Therefore, a severe accident violating the integrity of the cask is easily conceivable and the questions to be addressed is not whether or not a radiation release accident would occur, but *what are the most credible accident processes and what are their consequences*. Since the large-scale sea shipment of vitrified HLW is the first of its kind, an environmental impact assessment of the worst credible accidents during transport should be conducted before the first shipment. For this reason, CNIC is demanding the French and Japanese governments to conduct a full EIA. Result of CNIC's own assessments now in preparation will be reported later in this series.

## 'Use of Nuclear Weapons' not illegal?!

Last May, 1993, the World Health Organization General Assembly passed a resolution instructing the WHO to ask the International Court of Justice for an advisory opinion on the legal status of the use of nuclear weapons. Accordingly, the resolution asked states to make submissions to the International Court. The Foreign Ministry of Japan prepared a submission stating that the "use of nuclear weapons is not necessarily a violation of international law" which was announced to the ruling coalition government on the 2nd of June.

Soon after press reports concerning these statement, protests came from Gensuikin (Japan Congress Against A and H Bombs), bomb victims' groups, lawyers, and numerous other citizens and citizens' groups.

Why must Japan, having been twice attacked by nuclear bombs in Hiroshima and Nagasaki, make such a statement? The nuclear bombs of Hiroshima and Nagasaki were extremely eradicated destroying not only military facilities but residences, schools, hospitals, temples, and killing thousands of people. Those people who have survived have gone through terrific agonies. Many still suffer from the effects of radiation fifty some years later. Nuclear weapons kill indiscriminately. Their disastrous consequences, unrestricted by physical nor temporal borders, effect the environment as well as human beings. Furthermore under international law such as the Hague Articles of War and the First Protocol of the Geneva Convention, nuclear weapons are illegal.

Japan, having suffered atomic bombings, should certainly take the initiative in explicating nuclear weapons as illegal under international law. This is one step forward to a true nuclear-free world. Founded on experiences of and surrounding the Chernobyl accident, the Ukrainian government has submitted a statement that clearly

affirms the use of nuclear weapons to be inhumane and illegal. The Japanese government might do well to follow the Ukraine's example of outspokenness on the nuclear issue.

However, on the contrary, the Japanese government is presently pursuing a plutonium policy under the euphemistic name of 'peaceful purposes,' in which Japan will acquire great quantities of plutonium. Such actions have raised international concerns that Japan may be preparing to manufacture nuclear weapons. Moreover, by failing to affirm "the use of nuclear weapons as illegal," Japan appears to have equally admitted to the belief that nuclear weapons are useful and that the possession of nuclear arsenals would be desirable.

Governors and Mayors of Hiroshima and Nagasaki have made strong protests, along with the three political opposition parties which likewise voiced their objections. The then Environmental Secretary, Hamayotsu has demanded the government exercise more caution on such a controversial issue. As a result of the all-out harsh criticisms nation-wide, the government decided to cut 'the use of nuclear weapons is not necessarily illegal,' sentence from its submission to the International Court. Nonetheless, it has persisted in its former, yet unchanged stance.

To add to the ambiguity and controversy concerning Japan's excessive plutonium imports and weapons producing technologies, on June 18th former Prime Minister Hata expressed that "Japan has the capability of possessing nuclear weapons but does not possess them intentionally." This pressing question over Japan's nuclear armament potential remains at the forefront of national and international concern.

# Significant Incidents at Nuclear Plants

(January to June 1993)

---

Date	Plant	Short Description of Event
Jan. 18	Shimane 2	Leak from recirculation pump bearing; reactor manually stopped.
Jan. 20	Mihama 3	Substation stuck by lightning; operated at reduced power level.
Jan. 28	JMTR	Reactor scrammed due to control rod position shift.
Feb. 1	Tokai 1	Crack found in condenser tube during periodical inspection.
Feb. 4	Shimane 1	Reactor manually stopped due to containment sump water level rise.
Feb. 6	Fukushima I-4	Crack found in condenser tube during periodical inspection.
Feb. 7	Takahama 1	Crack found in condenser tube during periodical inspection.
Feb. 8	Tsuruga 2	Emergency diesel generator automatically shut down during function test.
Feb. 13	Kashiwazaki-kariwa	Fire took place at water treatment building; 6 electric control board breakers burned.
Feb. 19	Fukushima II-1	Reactor manually stopped due to water leak from recirculation pump bearing.
Feb. 22	Fukushima II	Hot steam gushed out from auxiliary boiler pipe at radioactive waste treatment building; worker died due to burns.
Mar. 14	Tsuruga 2	Primary steam leaked from ECCS system valve to containment.
Apr. 3	Tokai II	Reactor manually stopped due to containment sump water level rise caused by leak from recirculation pump bearing.
Apr. 6	Genkai 1	Damage to 75 steam generator tubes found during periodical inspection.
Apr. 16	Tokai I	19 cracks found in low pressure turbine generator shaft during periodical inspection.
Apr. 26	Fukushima I-5	Crack in recirculation pump pipe found during periodical inspection.
Apr. 27	Ikata 1	Damage to 7 steam generator tubes found during periodical inspection.
Jun. 2	Takahama 1	Damage to 118 steam generator tubes found during periodical inspection.
Jun. 7	Tokai PFPP	Monju fuel production line stopped due to failure of fuel pellet conveyer of continuous calcinator.
Jun. 29	Mihama 1	Damage to 16 steam generator tubes found during periodical inspection.

---

---



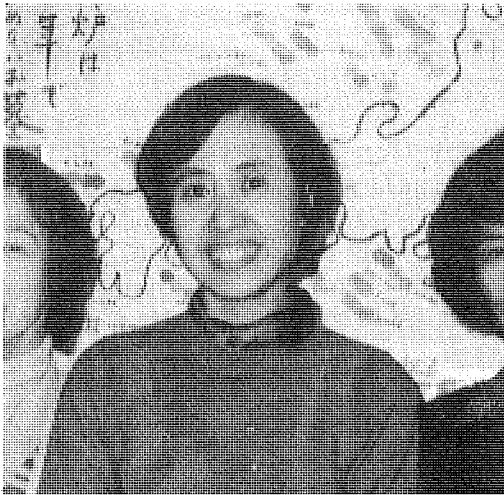
---

## Anti-Nuke Who's Who

---



---



YOKO TOMIYAMA

In 1973, Japanese society was shaken by the first oil crisis, raising public utility fees in quick succession. In 1974, resistance to electric power rate hikes spread throughout Japan. The "Association for Maintaining the Old Power Rates" was formed in Tokyo, and became the focal center for the various resistance movements. Yoko Tomiyama headed the association, which stood in strong opposition to nuclear power plants.

Tomiyama was born in Tokyo in 1933. She has many bitter memories of the Fifteen-Year War that began with Japan's invasion of Manchuria in 1931. Like many children in big cities, she was taken away from her parents and relocated to Shizuoka, south of Tokyo to avoid the bombing attacks prevalent throughout the war. When the war ended in 1945, Tomiyama was in Morioka City north of Tokyo. Her younger sister and brother were also separated from the rest of the family and moved from place to place. This experience has had a lasting effect on her. "I hate war," she says, "Nothing is more precious than peace."

After graduating from high school, she took a job at a bank, where she met her life partner. Around this time, pollution became a serious social problem throughout

Japan. It became difficult to find food that was uncontaminated by chemical and other pollutants. Worried about the safety of the food supply, Tomiyama joined the Setagaya Consumers Association in Tokyo.

In 1973, a group was formed to protest the use of petroleum-derived protein. The group rented a large room in Shibuya, Tokyo, and called it the Residents' Forum. The Forum became an open space for citizens opposing to various types of pollution to assemble freely.

Earlier in 1969, Naokazu Takeuchi, Katsuko Nomura, and five other persons - the so-called Seven Samurai - began the Consumers' Union of Japan (CUJ). This group was formed at a time when movements against the Vietnam War, student struggles, and a wide variety of other citizens' movements were taking place. Tomiyama joined CUJ at its start, and in 1990 succeeded N. Takeuchi as head, now serving as chairperson of CUJ.

At present, CUJ has about 6,000 grass-roots activists as its supporters, whose slogan is "Pass on healthy lives to our children." CUJ is non-partisan. It aims to change today's highly mass-consumption based society to a society that is completely self-sustaining. Tomiyama stresses importance of cooperating with other countries, and in particular with other Asians.

This year, CUJ is concentrating on food issues, Japan's inequitable tax system, (including consumer tax, which it wants to abolish), and the phasing out of nuclear power plants.

The gift of life does not belong to any single individual. After 3.6 billion years of evolution, all life is closely related. Tomiyama believes that abolishing nuclear power is the only way to respect and protect that interconnectedness. Tomiyama herself is a very quiet, unpretentious person. I often wonder where she gets her indomitable spirit and endless energy!

(by Yukio Yamaguchi, Association for Real Living)



## NEWS WATCH

### Compensation Approved for Nuclear Worker

Nobuyuki Shimahashi's parents have been filing for compensation to the Labor Ministry's local Labor Standards Inspection Office in Iwata, Shizuoka over his death due to radiation exposure while working at the Hamaoka Nuclear Plant. Nobuyuki had been exposed to 50.63 millisieverts of radiation during his eight years of labor. He died of chronic myelogenous leukaemia in 1991. On July 26, the Labor Standards Inspection Office officially acknowledged Shimahashi's death as labor related, and approved compensation. This is the second case in which the labor accident compensation had been approved for nuclear plant workers. The families of two deceased former subcontracted employees of Kansai Electric have also filed similar complaints, which are currently under consideration. More complaints are expected to be filed.

### Japanese Reactors are Aging

On May 29 at Fukushima II-3 (BWR, 1,100 MW) a flow reduction at a recirculation pump's jet pump was discovered, and the reactor was shut down manually on May 30. The pump malfunction was caused when the end of a transient beam fell off. According to officials, the beam had slipped when being put back into position after the regular inspection, thus producing excessive strain. One month later, on June 29, a crack was discovered in the core shroud of Fukushima I-2 (BWR, 784 MW). The

crack was 2.3m long and 0.3mm wide, and ran in the direction of the shroud's circumference. The shroud -- a large metal cylinder that is used to recirculate the coolant efficiently -- is welded together with the reactor pressure vessel to form an integral structure. Although since 1993 similar accidents have occurred often in Western countries, this is the first in Japan. This example shows that Japan's reactors have clearly aged.

### Troubles Found Outside of Regular Inspections

The steam generator replacement at Mihama 1 (PWR, 340 MW) will be carried out beginning this November, one year earlier than scheduled. This replacement will take place prematurely because primary coolant leaked into the secondary coolant system on February 18, the cause of which was found to be a circumferential crack in a steam generator tube. There are said to be immobilizations in multiple structure cases anti-vibration plates. But, regular inspections do not include checking to see if components have been immobilized or if damage has occurred in the circumferential direction of the U-shaped parts of the steam generator tubes. This is yet another example exposing the inadequacy of the regular inspections.

### First Steam Generator Exchanges Completed

Japan's first steam generator exchanges were recently completed in close succession,

one at Takahama 2 (PWR, 826 MW) and another at Mihama 2 (PWR, 500 MW). At Takahama 2, work was completed on June 14, and the reactor was started on July 2. The exchange took 161 days, and the total exposure dose was 1.46 person-sievert, one-third less of that originally planned. Mihama 2 is the reactor that suffered the guillotine break of a steam generator tube in February 1991. On July 7 workers finished replacement work that took 366 days. Exposure was 1.43 person-sievert, one-half less than anticipated. Apparently plans call for restarting the Mihama reactor in mid-August.

## Nuclear Cooperation in Asia Increasing

The International Cooperation Center of the Japan Atomic Industrial Forum, Inc. compiled a survey report on the situation of Japan's cooperation in nuclear development for developing countries in fiscal 1993. According to the report 326 specialists were dispatched from Japan, 68 persons (26%) more than the previous year, while 467 trainees from developing

countries were received, 103 persons (28%) more than the previous year. Many cases, however, were for short-terms of less than one month, as in the case 95% of the specialists dispatched.

In terms of share of partner countries, the highest was Indonesia with 27%, followed by China (13%), South Korea (8%), Malaysia (7%) and Taiwan (5%).

## Long-Term Program Ignoring Citizens' Demand

The Atomic Energy Commission (AEC) announced on June 24 Japan's new Long-Term Program for nuclear energy development and utilization. Its content is almost similar to the draft program reported in the last issue of NIT. At a public hearing held in March, many people demanded a moratorium on the plutonium utilization. Some citizens' groups presented a request to the commission to include the moratorium in the Long-Term Program. This demand however, was ignored in the final program.

\* \* \*

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 a subscription (subscription rate: supporting subscriber \$40/year or ¥5,000/year, subscriber \$20/year or ¥3,000/year). The subscription fee should be remitted from a post office to our post office account No:00160-0-185799, HANGENPATU-NEWS by postal money order. We would also appreciate receiving information and newsletters from groups abroad in exchange for this newsletter.

NUKE INFO TOKYO Publishing Committee  
c/o Citizens' Nuclear Information Center  
302 Daini Take Bldg., 1-59-14 Higashi-nakano,  
Nakano-ku, Tokyo 164, JAPAN  
Phone:81-3-5330-9520  
Fax:81-3-5330-9530