

# NUKE INFO TOKYO

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Citizens' Nuclear Information Center

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## Hamaoka Verdict: Passing Judgment on the Judge



"Unjust Verdict"

The Hamaoka nuclear power plant is safe. You can shake it, but you can't break it. Thus wrote Judge Akira Miyaoka (long may his name be remembered) of the Shizuoka District Court in his 26 October "Nuclear Power Day"<sup>1</sup> verdict.

The plaintiffs in this case are not so easily convinced. They have appealed the verdict to the Nagoya High Court. Indeed, it appears that even people who are generally favorable to nuclear power are skeptical. Japanese editorial writers' ability to say nothing in 600 words is legendary, so the following comment in the conservative Nikkei Shimbun (27 October 2007) should be read as an expression of concern:

"The verdict will be a great relief for electric power companies, but Japan is a very earthquake-prone country, so it is necessary to continually take on board new knowledge concerning the earthquake resistance of nuclear facilities and to work to prevent anxiety arising

among local residents and the general public."

A more explicit criticism appeared in the Asahi Shimbun (29 October 2007):

"If the Tokai earthquake does indeed strike, how can we be sure that its intensity will be in the range that the authorities deem to be safe? The residents are far from relieved by the court decision ... It seems

that the court ruling places too much trust on the government's safety standards, the nuclear plant's quake-resistant design based on those government standards, as well as the plant's actual operations."

### Background

A civil lawsuit demanding a temporary injunction to terminate the operation of Units 1-4 of the Hamaoka nuclear power plant was filed on 25 April 2002 and a regular lawsuit was filed on 3 July the following year. (Unit 5, which

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commenced operations in January 2005, was not covered by the suits.) The District Court's verdict covers both suits. Had an injunction been granted, the defendant, Chubu Electric Power Company, would have been ordered to shut down the first four of its nuclear reactors. By contrast, the verdict demanding termination of operation of the Shika-2 NPP handed down on 24 March last year did not include an injunction, so the plant is allowed to continue operating without penalty while an appeal is heard (see NIT 112).

During the course of the trial, the plaintiffs provided detailed evidence regarding safety deficiencies and the dangers associated with earthquake-induced nuclear disasters ("gempatsu shinsai"). However, the court concluded that as long as the defendant's safety assessment and safety checks were carried out in accordance with government regulations, all is well. The Japanese nuclear industry's history of cover-ups and failures to identify and respond to safety-related problems did not prompt the court to question this dubious presumption. The historical record did not seem to register strongly in the mind of Judge Miyaoka.

### **High(low)lights from the verdict**

\* The court chose to ignore reports published in the media in September about the possibility that an earthquake even bigger than the predicted Tokai earthquake occurs in this region once every 1,000 years or so. This theory is based on evidence of previous massive earthquakes discovered by researchers through boring tests carried out near the Hamaoka NPP. Nevertheless, the court concluded that "the estimate of the earthquake movement is sufficiently conservative."

\* The court accepted the assessment based on the old earthquake resistance guidelines, even though new guidelines were issued last year in response to concerns about the adequacy of the old guidelines.

\* The court rejected the possibility that multiple simultaneous failures could occur, despite the fact that such failures occurred at the Kashiwazaki-Kariwa NPP during the Chuetsu-Oki Earthquake (deformed pipes, cracks in buildings, a fire in a transformer, etc.). Instead, it stated, "It is not necessary to assume multiple simultaneous failures in the safety assessment" and "It is not possible to say that there is a realistic chance of multiple simultaneous deformation and rupture of pipes."

\* Concerning plant aging, the court disregarded

the fact that it is impossible to predict where stress corrosion cracking will occur, or to inspect the full length of the piping. Instead, it concluded that the plant is safe as long as checks and inspections are carried out and parts are replaced appropriately.

\* Over a period of five years, the plaintiffs presented evidence on a wide range of matters including the following: the type of earthquakes that should be taken into account (their scale and manner of occurrence); common-cause accidents arising as a result of earthquakes; the possibility of vast numbers of simultaneous failures; the plant's safety margin; and the danger of aging of important equipment. The court dismissed all these as "various phenomena that are conceivable in the abstract".

### **Assessment**

One would have thought that it was not too difficult to imagine the cumulative safety risk of simultaneously occurring multiple pipe ruptures, emergency power supply failure, failure of control rods to insert and so on. The plaintiffs pointed out that simultaneous multiple failures such as these are precisely what one would expect in an earthquake. After the Hamaoka hearings ended, the Chuetsu-Oki Earthquake gave us a preview of the type of problems which might arise in the much larger earthquake that is predicted at Hamaoka. However, the court was unmoved.

Should a "gempatsu shinsai" disaster ever actually occur at Hamaoka, there can be no doubt about the seriousness of the consequences. Hamaoka is above the epicenter of the predicted Tokai earthquake, a huge earthquake caused by the collision of tectonic plates. Inevitably, such an earthquake will cause massive disruption to the emergency systems on which people would normally rely in the case of a major release of radioactivity. It will be impossible to evacuate most of the victims. They will be left with the dilemma of whether to stay indoors, or to brave the radiation and go outside to avoid being trapped inside crumbling buildings. Depending on the weather conditions, the radioactive fallout is likely to reach Tokyo, around 150 km East of Hamaoka. With a population of around 40 million, the Kanto Plain in which Tokyo is located is one of the most densely populated places on earth. A disaster on this scale has never been seen in human history. This is the nightmare that haunts the plaintiffs in the Hamaoka lawsuit. Not surprisingly, it will

take more than Judge Miyaoka's assurances of the plant's safety to ensure they sleep peacefully.

CNIC takes the view that when making judgments about matters which have the potential to effect the health and safety of large numbers of people, it is necessary to consider the worst-case scenario and to take preventative measures. Society should adopt the precautionary principle as the basis for decision-making in such cases. This verdict follows a quite different principle. The principle on which it is based is "when in doubt go with the status quo". Alternatively, this principle could be expressed as: "always follow the road of least resistance".

We suspect that Judge Miyaoka was concerned about the wider ramifications of his verdict - for nuclear power in Japan and possibly at a more personal level as well. Perhaps some people will sympathize with him. How could we expect a judge in a minor regional court, ill-qualified in such technical matters, to deliver a verdict that, besides closing down the Hamaoka nuclear power plant, would inevitably provoke calls for the closure of nuclear power plants around the whole country? Some might ask what difference it makes anyway. After all, this case was always going to go all the way to the Supreme Court.

In the end, the judgment we make comes down to the underlying belief systems from which we operate. Those of us who believe in following the precautionary principle would judge that a disaster worth preventing is worth preventing sooner rather than later. On the other hand, those who believe in following the path of least resistance might congratulate Judge Miyaoka for making a career-wise decision. Of course, those people might not be quite so understanding if a "gempatsu shinsai" disaster occurs between now and the appeal court's verdict.

Philip White (NIT Editor)

1. The nuclear club in Japan commemorates 26 October as "Nuclear Power Day". On that day in 1963, at the Japanese Power Demonstration Reactor, Japan generated electricity from nuclear power for the first time. No one else takes any notice of this day, except the opponents of nuclear energy, who call it "Anti-Nuclear Power Day".

## K-K: Stuck Control Rod and Other Problems

Four months have passed since the July 16 Chuetsu-Oki Earthquake. As at October 31st, 2,997 problems had been found at the Kashiwazaki-Kariwa nuclear power plant. Gradually the full scope of the damage is emerging.

### Details of the Earthquake

The fault in the seabed which caused the magnitude 6.8 earthquake is much longer than the 8 kilometers originally estimated by Tokyo Electric Power Company when it applied for a license. In fact, it is believed to be about 30 kilometers long. In the southern part of the epicenter, which was nearest to the nuclear power plant, the fault slopes downwards from the sea towards the land. In the vicinity of the plant the fault surface is at a depth of about 10 kilometers, although it is not certain whether the fault continues directly under the plant.

The seismic acceleration experienced by the plant as a result of the earthquake exceeded the design limit for almost all periods of the spectrograph (see diagram on page 4). It was the first time that such a situation had arisen anywhere in the world. The seismic acceleration was greater for units 1-4 than for units 5-7. This was due to the strength of the latter half of the seismic pulse. It was not caused by an aftershock. There were some aftershocks, but much fewer than one would expect for such a large earthquake.

The opponents of the plant always called it "a nuclear power plant built on tofu". As they predicted, the ground of the site was horribly deformed by the quake. The ground was forced up a maximum of 60 cm, while it sunk as much as 160 cm elsewhere. As a consequence, the buildings themselves were displaced by the movement. The relative vertical displacement of the turbine building and the reactor building of unit 1 was 24cm. However, since the Geographical Survey Institute's reference point was destroyed by the quake, the absolute displacement is unknown. Nevertheless, it is clear that the plant was built on top of an active fold and that the judgments of both TEPCO and the government were incorrect.

### Damage to the Plant

By and large the maximum shear strain on the

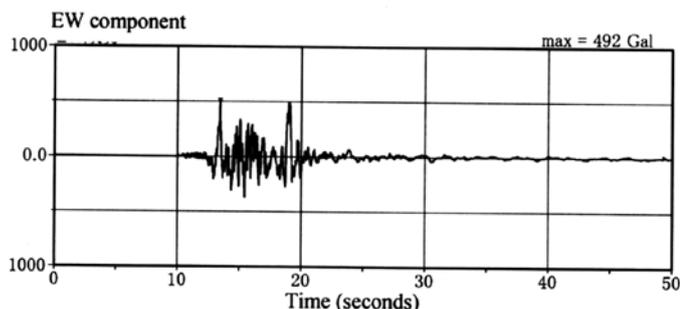


Fig. 2-4: Acceleration time history waveforms for the base mat of the unit 4 reactor building (East-west direction)

*Diagram above copied from 30 July 2007 TEPCO report*

reactor buildings was within their elastic limits. However, east-west movement of the fifth floor basement in the reactor 2 building was near the level where cracks could arise.

Unit 2 was being started up, and units 3, 4 and 7 were operational, but somehow the minimum functions of shutdown, cooling and containment were maintained (NIT 120).

The head of reactor 7 was removed and inspections of the core began on October 2nd. However, a 4-meter long control rod, which is required to meet the highest earthquake resistance standards, was stuck and could not be removed. This was the first irregularity found in an item of equipment within the core.

It was discovered that 200ml of water, which was slightly contaminated with radioactivity, had somehow leaked through the 2-meter concrete wall of the unit 7 spent fuel pool. This suggests that the stainless steel liner (6mm thick) might have been damaged. Leaks have been found in two places in the wall of the spent fuel pool of unit 7 and in 3 places in unit 1.

Unit 6 was closed for inspections when the earthquake struck. Signs of scraping were found in rotor blades in 11 stages of the 14-stage low-pressure turbine and 14 stages of the 18-stage high-pressure turbine. In other words, over half the moving blades in the turbines were damaged as a result of the earthquake. The gap between the moving blades and the stationary blades is very

Fig. 3-3: Acceleration response spectra for the base mat of the unit 3 reactor building (East-west direction)

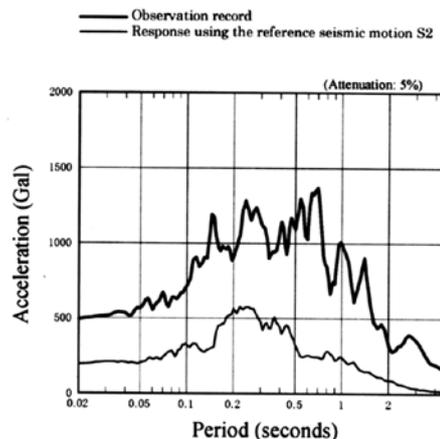


Fig. 3-4: Acceleration response spectra for the base mat of the unit 4 reactor building (East-west direction)

small, just 3mm in some places.

Unit 5 was also closed for inspections. However, when the fuel assemblies within the reactor core (13cm x 13cm x 4.5m, 300kg) were being moved to the spent fuel pool, 1 of the 764 assemblies could not be removed. It was one of the outermost assemblies. It is possible that the zirconium alloy cladding had been deformed and that it was stuck on the plate of the top lattice.

Also in unit 5, hangers supporting main steam pipes and recirculation pipes were found to be out of alignment.

As described above, more and more effects of the earthquake are emerging. However, the most frightening thing is that the extent of deformation ("plastic" (irreversible) deformation, as opposed to "elastic" (reversible) deformation) cannot be determined by visual inspection. It is likely that important equipment in the nuclear power plant suffered considerable deformation. Furthermore, it is impossible to check every location thoroughly. It must be concluded, therefore, that it would be very risky to restart the plant.

Yukio Yamaguchi (CNIC Co-Director)

#### Haiku for the season

*Chilly morning  
A hawk wheeling  
Care free*

Setsuo Iida

## Rokkasho active tests stopped for one month - end piece falls to bottom of the cleaning tank -

**A**ctive testing of the Rokkasho Reprocessing Plant stopped for one month from October 1st to October 25th due to damage to equipment in the Head End Building. This is the building where shearing and dissolving of the spent fuel are carried out.

The damage arose in the end piece cleaning tank. The end pieces are sheared from each end of the spent fuel assemblies before the reprocessing process begins. They are cleaned with nitric acid and stored as radioactive waste. On October 1st, a basket, which contained an end piece and was located within the cleaning tank, stopped operating in response to an alarm. The operator manually jiggled it up and down as usual, but this time it did not resume operating the way it usually did. When the operator checked the inside of the basket again with a camera, the end piece could not be found. Continued checks using a camera showed that the door of the basket was bent. It was not until October 5th that the end piece was finally discovered on the floor of the cleaning tank. By manually forcing the basket up and down the operators had caused the door to become bent. It appears that the end piece became stuck as a result and fell through the gap which had been created.

At first Japan Nuclear Fuel Ltd (JNFL) thought it was a minor problem, but when it realized that the incident required a special report to be submitted to the government JNFL revised its assessment up to the top "A" level. Perhaps due to a lack of experience working in the confines of such a highly radioactive cell, recovering the end piece and replacing the door of the basket turned into a major undertaking. JNFL was forced to call in two people from France from Areva's La Hague reprocessing plant to help out. Active testing finally recommenced on October 25th and shearing of the 110 tons of spent fuel for step 4 was completed on November 8th.

### Vitrification begins

Vitrification of highly radioactive liquid waste began on November 5th. The vitrified waste produced at Rokkasho is stored in 40cm diameter by 1.3m long stainless steel canisters. Highly radioactive liquid waste is mixed with molten borosilicate glass and poured into the canisters,

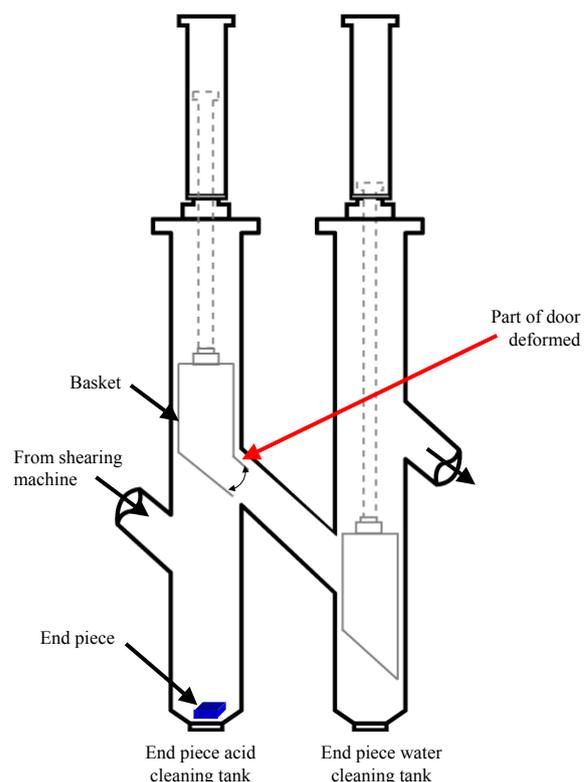
where it solidifies as it cools. Each canister holds about 150 liters.

Under an agreement with Aomori Prefecture, the glass canisters will be held at the Rokkasho Reprocessing Plant for 50 years before being shipped to a final repository. However, there are still no candidates to host this repository.

### Tritium found in Obuchi Marsh

At a meeting of Aomori Prefecture's environmental radiation assessment committee at the beginning of October, elevated tritium levels were reported for Obuchi Marsh, which borders the Rokkasho Reprocessing Plant on the south side. A level of 2-3 becquerels of tritium per liter of water was discovered. This exceeded the previously recorded range. Rokkasho's liquid wastes are released from a pipe 3 kilometers out to sea. However, Obuchi Marsh is a brackish lake and it appears that the tritium flowed back from the outlet of the pipe. This type of movement of radioactive liquid waste was not considered in the safety assessment for the Rokkasho Reprocessing Plant. It can be expected that this will become a big problem in future.

By Masako Sawai



## Situation of Japanese Nuclear Workers (second installment)

In the case of the malignant lymphoma of the late Tadashi Kiyuna discussed in NIT 120, the Yodogawa Labor Standard Supervision Office judged the cause to be viral and submitted its assessment to the Ministry of Health, Labor and Welfare (MHLW) without even looking into Kiyuna's work environment. The group supporting Kiyuna's case strongly demanded that MHLW not make a judgment without first checking Kiyuna's working conditions.

One of the reasons for the Labor Standards Office's shoddy response in this case was the failure to widely disseminate information about the relationship between radiation exposure and leukemia-like illnesses after workers compensation was awarded for Mitsuaki Nagao's multiple myeloma in January 2004 (NIT 99). During negotiations after the Nagao case, MHLW said that the question of whether to add multiple myeloma to its list of radiation-induced illnesses would be included on the agenda of its next investigation committee meeting. This still has not been done. MHLW has abrogated its responsibility as the supervising authority.

From the beginning of commercial generation of nuclear power in Japan until 2006 worker exposure to radiation totaled 3,000 person-sieverts. Despite the fact that many workers have been exposed to large amounts of radiation, there have been very few applications for workers' compensation. Including the case of Tadashi Kiyuna, we are aware of only 18 cases, 9 of which were accepted. Five of those which were accepted were for leukemia and 3 were for acute radiation exposure from the JCO criticality accident at Tokai Village in Ibaraki Prefecture. The other case that was accepted was Mitsuaki Nagao's multiple myeloma.

We are able to obtain information about compensation for radiation workers for the UK and the US from official web sites. However, we would greatly appreciate it if people from other countries could provide information, or refer us to sources for their country.

### **Many problems with epidemiological surveys for Japan's nuclear workers**

Since 1990 the Ministry of Education, Culture, Sports, Science and Technology (formerly Science

and Technology Agency) has commissioned the Radiation Effects Association to carry out epidemiological surveys for workers at Japan's nuclear facilities. It has published reports comparing death rates for male nuclear workers with death rates of the general male population and investigating the relationship between death rates and radiation exposure rates. The reports published so far cover three periods: 1990 - 94 (1st period), 1995 - 1999 (2nd period), 2000 - 2004 (3rd period). The reports found a significant relationship between cumulative radiation exposure and death rates from major types of cancer among Japanese people: cancer of the esophagus, stomach and rectum (2nd period); cancer of the esophagus, lung cancer and multiple myeloma (3rd period).

By rights, the effects of smoking should have been included in the research program from the outset. However in Japan, a lifestyle survey, as a parallel study separate from the main study, was only started during the second period in 1997, after a significant relationship had begun to emerge. They then rejected the relationship between death rate and radiation exposure on the grounds that workers with higher radiation exposures also had higher smoking and alcohol consumption rates, as well as histories of health-impairing work. It makes one wonder what the point of these epidemiological studies was.

Without an analysis taking into account social class, epidemiological studies of Japan's nuclear workers are not very reliable. Non-Japanese workers and workers of unknown abode were excluded from the studies. Japan's nuclear industry is characterized by many layers of subcontractor and sub-subcontractor workers. Non-Japanese workers and workers of unknown abode might have been exposed to high levels of radiation, so follow-up studies of these people should be carried out.

As problems and accidents arise due to the aging of nuclear power plants, nuclear workers are likely to face even more difficult conditions. In order to protect these people, it is essential to have a system which properly understands the health effects of radiation.

Mikiko Watanabe (CNIC)

### Japanese Holdings of Separated Plutonium at 31 December 2006

**Held in Japan:** Quantities shown are kgPu (amounts shown in bracket are for 2005)

Reprocessing Facilities	JAEA (Tokai)	JNFL (Rokkasho)	Quantity
Plutonium nitrate etc. (processes from dissolving up to, but not including, placement in storage containers for storage as plutonium oxide)	643 (660)	640 (0)	1,283 (660)
Plutonium oxide (stored in storage containers as plutonium oxide)	173 (164)	97 (0)	270 (164)
<b>Total Plutonium</b>	<b>817 (824)</b>	<b>737 (0)</b>	<b>1,554 (824)</b>
Total Fissile Plutonium	560 (565)	512 (0)	1,072 (565)

JAEA MOX Fuel Fabrication Facility		
Plutonium oxide (stored in storage containers as plutonium oxide)		2,685 (2,526)
Testing and fabrication stage		862 (863)
Newly fabricated fuel (held as completed fuel assemblies etc.)		297 (338)
<b>Total Plutonium</b>		<b>3,845 (3,727)</b>
Total Fissile Plutonium		2,680 (2,603)

Nuclear Reactor Facilities	Joyo	Monju	Fugen	Power reactors in use	Research and development facilities
Nuclear Reactor Facilities (held as new fuel etc.)	128 (145)	367 (367)	0 (0)	415 (415)	444 (445)
<b>Total Plutonium</b>	<b>1,354 (1,372)</b>				
Total Fissile Plutonium	1,009 (1,021)				
<b>Total Plutonium</b>	<b>6,753 (5,923)</b>				
Total Fissile Plutonium	4,761 (4,188)				

**Held Overseas:** Quantities shown are kgPu (amounts shown in bracket are for 2005)

Separated Plutonium Held in UK	11,363 (11,395)
Separated Plutonium Held in France	13,966 (14,022)
<b>Total Separated Plutonium Held Overseas</b>	<b>25,329 (25,417)</b>

NB: Figures were only given for fissile plutonium held overseas. It is not clear why, but this year figures were not given for total plutonium held overseas.

### Plutonium Use January-December 2006

	JAEA (Tokai)	JNFL (Rokkasho)	Quantity
Plutonium Oxide Recovered (from plutonium nitrate solution)	176 (161)	97 (0)	273 (161)
Monju, Joyo, Fugen, etc.			
Amount used in fuel fabrication process (moved from raw material storage area to fuel fabrication area)	1 (183)		
Amount loaded into nuclear reactor facilities	57 (35)		

## 2006 Increase/Decrease in Inventory of Separated Plutonium Held in Japan

### Total (kgPu)

Separated at reprocessing facilities	903
Loaded into reactors	- 57
Increase/decrease during processes within facilities	- 16
<b>Total increase/decrease</b>	<b>830</b>

<b>JAEA Reprocessing Facility</b> (separation & purification to storage of mixed and converted raw material)		
Item		Increase/Decrease
Quantity held at 1 January 2006 (end 2005)		824
Separated during 2006		165
Outgoings during 2006 (removed from facility)		- 166
Increase/decrease during processes within reprocessing facility		- 6
Detailed breakdown	Transfer to retained waste	- 6.2
	Retransfer (recovered) from retained waste	3.5
	Nuclear loss (radioactive decay)	- 1.7
	Measured discard	- 3.6
	Material unaccounted for	2.2
Quantity held at 31 December 2006		817

<b>JAEA MOX Fabrication Facility</b> (from mixed oxide powder (MOX) to completed fuel assemblies)		
Item		Increase/Decrease
Quantity held at 1 January 2006 (end 2005)		3,727
Received during 2006		166
Outgoings during 2006 (removed from facility)		- 40
Increase/decrease during processes within reprocessing facility		- 8
Detailed breakdown	Shipper/receiver difference	- 0.4
	Transfer to retained waste	- 0.0
	Retransfer (recovered) from retained waste	0.0
	Nuclear loss (radioactive decay)	- 8.9
	Material unaccounted for	1.0
Quantity held at 31 December 2006		3,845

<b>Nuclear Reactor Facilities Etc.</b> (Joyo, Fugen, Monju, power reactors in use, research and development facilities)		
Item		Increase/Decrease
Quantity held at 1 January 2006 (end 2005)		1,372
Received during 2006		40
Loaded during 2006		- 57
Quantity held at 31 December 2006		1,354

<b>JNFL Rokkasho Reprocessing Facility</b> (separation & purification to storage of mixed and converted raw material)		
Item	Increase/Decrease	
Quantity held at 1 January 2006 (end 2005)	0	
Separated during 2006	738	
Outgoings during 2006 (removed from facility)	0	
Increase/decrease during processes within reprocessing facility	- 2	
Detailed breakdown	Transfer to retained waste	- 0.8
	Retransfer (recovered) from retained waste	0
	Nuclear loss (radioactive decay)	- 0.8
	Measured discard	0
	Material unaccounted for	- (*)
Quantity held at 31 December 2006	737	

\* Actual values were not measured at the end of 2006. Only book values were available, so no figure could be given for material unaccounted for. CNIC has asked for further clarification of this.  
(For explanations of terminology see the IAEA Safeguards Glossary.)

## 2007 International NGO Climate Change Forum in Taiwan

The 2007 International NGO Climate Change Forum was held in Taiwan from October 19-21, sponsored by the Institute of Environment and Resource. Office support was provided by the Taiwan Environmental Protection Union. There were twelve international guests.

A round table meeting, where NGO representatives exchanged ideas, was held on the 19th. The main meeting, where participants gave presentations, was held on the 20th.

Jurgen Maier from Germany stressed that introducing renewable energy does not have a negative impact on the economy. Rather, it has a positive impact by creating new business opportunities. Sandy Gauntlett (New Zealand), Pavel Suian (Romania), Steve Patrick Lalande (Seychelles), and Michele Perrault (USA) emphasized the seriousness of the problem of global warming and the important role of NGOs. Jun-kwan Ahn told us about the activities of the Korean Federation for Environmental Movement and discussed the increase in Korea's CO<sub>2</sub> emissions. Mika Obayashi said that Japan still has a very low uptake of renewable energy. She told us about the efforts of local governments, including the plan of Tokyo City to reduce CO<sub>2</sub> emissions by 25%. Fumiaki Utaka (Japan) explained the initiatives of local governments in the context of the work of ICLEI Local Governments for Sustainability. In my presentation I pointed out

that nuclear energy is no use in preventing climate change.

The official meeting finished on the 21st and the following day I visited the town of Kungliao, where Taiwan's fourth nuclear power plant (Lungmen) is being constructed. My purpose was to see the state of progress of construction and to exchange ideas with local activists. We visited the local representative of Taiwan Environmental Protection Union. He informed us that construction of the plant was 50-60% complete. The reactor building and the turbine building of the first reactor were not complete. The seawater intake and wastewater channels were also incomplete.

There is a seismic fault a few kilometers from the plant. Taipower says it is not an active fault, but Tokyo Electric Power Company said the same thing about Kashiwazaki-Kariwa before the Chuetsu-Oki Earthquake. The Chuetsu-Oki Earthquake was a big issue in Taiwan as well.

In addition, there is environmental damage from a big port facility, built about 3km away for unloading equipment. Due to erosion, only half the sand remains on a popular swimming beach nearby and the local economy has been adversely affected by the drop in the number of tourists during the summer.

Report by Hideyuki Ban (CNIC Co-Director)

## Anti-Nuke Who's Who

**Sadao Kaneko: an indomitable spirit wrapped in a calm smile**

by Masashi Kuwabara\*

**S**adao Kaneko was born into a farming family in 1956 in Teradomari Town (now part of Nagaoka City) in Niigata Prefecture. In the 1970s, when he was a university student in Tokyo, he learnt from his friends about the fierce struggle against the construction of Narita Airport by the farmers of Sanrizuka, so he went there to see for himself. It was just when Narita Airport was about to open. He was very impressed by the farmers he met. One day he was at a meeting where a young person from Kashiwazaki was making an appeal. That was Sadao's introduction to the plan for a nuclear power plant at Kashiwazaki-Kariwa.

At the time there was a great struggle going on between the citizens of Kashiwazaki City and Kariwa Village and Tokyo Electric Power Company (TEPCO) over the destruction of forests for the construction of the nuclear power plant. When he graduated from university and returned to his hometown, it was quite natural for Sadao to join the ranks of the protesters. As time went by, he also became involved in the campaign against the Maki nuclear power plant plan (see NIT 98) and joined the landowners trust opposed to the Maki plan. The town where Sadao was born and raised, and where he still farms, is 35 kilometers from Kashiwazaki-Kariwa and only 15 kilometers from Maki Town. Ever since he graduated from university, Sadao Kaneko has walked hand-in-hand with the citizens of Kashiwazaki, Kariwa and Maki.

Sadao says, "The campaigns of the people of Sanrizuka, Kashiwazaki-Kariwa, and Maki have something in common. People subjected to formal and informal social constraints threw off their yoke and created a moment in which they expressed themselves freely. It is impossible to express in words the sense of liberation experienced in that moment. You could even call it exquisite."

Also, the connections between people all around Asia were deepened. "The people of Buan in South Korea say that when they felt entrapped, confronted by the violence of the state, the campaign for self-determination through a local referendum by the people of Maki, with whom they had maintained contact, was like a revelation. Eventually, the people of Buan also achieved self-



determination through a local referendum on the proposed nuclear waste dump. Over 70% voted against the dump. It is hard to forget the solidarity between Maki and Buan."

In July this year the site of the Kashiwazaki-Kariwa nuclear power plant was shaken by the Chuetsu-Oki Earthquake. The plant suffered countless instances of damage and radioactivity was released into the environment. The Madogazaka Fault moved and the ground directly beneath the plant was pushed up. Locals had pointed to this fault from the earliest days, so the failure of TEPCO, which assessed that the fault would not move, and the government, which accepted that assessment, is plain to see.

Sadao, who was himself evacuated as a result of the earthquake, is in the center of the people's movement to close the Kashiwazaki-Kariwa nuclear power plant. This follows on from the cancellation of the Maki nuclear plan as a result of the local referendum, the cancellation of the "prior understanding" for the introduction of plutothermal to Kashiwazaki-Kariwa, and the cancellation of the nuclear waste dump in Buan. It is a huge undertaking, but Sadao's broad and detailed knowledge of the problems of nuclear power and his indomitable spirit, wrapped in a calm smile, are a great source of strength to the movement.

\* *Masashi Kuwabara fought alongside Sadao Kaneko in the campaign against the Maki nuclear power plant.*

# NEWS WATCH

## **HLW Dump: Central Government Enters the Fray**

Since 2002, the Nuclear Waste Management Organization (NUMO) has been publicly calling for applications from local authorities to host a high-level radioactive waste (HLW) dump. However, it still has no candidates for even the first stage, which only involves a document study. Responding to this failure, on September 12 the Agency for Natural Resources and Energy (ANRE) proposed to the Advisory Committee for Natural Resources and Energy's radioactive waste subcommittee that, in addition to the NUMO process, the central government should be allowed to submit applications to local authorities seeking their agreement for studies. The subcommittee agreed with this suggestion. Public comments on the proposal have been invited and an official decision is planned after these have been considered. Comments submitted so far include the following:

- \* The power companies were responsible for producing the waste and power companies set up NUMO to undertake HLW disposal on their behalf, so it is very odd for the government to submit applications to local authorities.
- \* There is a danger that the government will select a candidate site by force.

## **Fabrication of MOX Fuel for Kyushu/Shikoku Electric**

On September 3rd and 10th respectively, Kyushu Electric and Shikoku Electric applied to the Minister of Economy, Trade and Industry for inspection of documents related to the import of MOX fuel that will be used in their Genkai-3 (PWR 1,180 MW) and Ikata-3 (PWR 890 MW) reactors. In both cases the fuel will be fabricated at France's Melox Plant. Fabrication for Kyushu Electric's Genkai-3 commenced on October 9th. For Genkai 16 assemblies will be fabricated, while 21 assemblies will be fabricated for Ikata.

## **Design Approval Sought for 4S Reactor**

On October 23rd, the US Nuclear Regulatory

Commission held a pre-application meeting in relation to design approval of the "4S" reactor. The 10-50 MW sodium-cooled small fast reactor was jointly developed by Toshiba and the Central Research Institute of Electric Power Industry (CRIEPI). "4S" stands for "super-safe, small and simple". The town of Galena in Alaska is considering a proposal to use this reactor (see NIT 105).

## **Benches & Tables Produced Using Radioactive Waste**

News Watch 119 reported that some of the steel scrap from the decommissioning of Japan Atomic Power Company's Tokai-1 reactor (GCR 166 MW) had been "cleared" for treatment as non-radioactive waste. On October 10th, it was reported that this steel had been turned into benches, tables and radiation shields. It was reported that the radiation shields had been sent that day to the Japan Proton Accelerator Research Complex (also in Tokai Village, Ibaraki Prefecture), but the destination of the benches and tables was not stated.

## **FNCA Panel Considers Human Resources Development**

From October 30th - 31st in Tokyo the Japan-led Forum for Nuclear Cooperation in Asia (FNCA) held a panel discussion on nuclear cooperation in Asia. Participating countries reported on the current status of human resources development in the field of nuclear power. Japan's presentation included knowledge management methods to ensure safe use of nuclear power and human resources development know-how for countries considering introducing nuclear power.

## **TEPCO to Support Construction and Operation of ABWRs in US**

On October 12th, Tokyo Electric Power Company (TEPCO) announced that it had signed a technology consultation agreement with US company STP Nuclear Operating Co. concerning construction and operation of ABWRs (Advanced Boiling Water Reactor). The contract is for a maximum of 3 years covering the period up to

the award of a Combined Construction Permit and Conditional Operating License (COL) for South Texas Project reactors 3 and 4 (1,350 MW each). An application for a COL was submitted on September 24th. If the contract runs for the full 3 years, total consulting fees will be around 180 million yen.

TEPCO provided technical design support prior to submission of the COL application. Under the new contract, TEPCO intends to provide advice in regard to the construction process, operational management, operator training, manuals and so on.

### TEPCO in the Red in FY2007

On October 31st, TEPCO announced that it expects to make a loss in the 2007 Fiscal Year. It will be the first time since 1979 that TEPCO has recorded a net loss. TEPCO expects revenue from electricity sales to be satisfactory at 5.47 trillion yen, but due to the shutdown of all 7 reactors at Kashiwazaki-Kariwa and high oil prices it predicts an overall loss of 95 billion yen (consolidated figures).

The effects of the Chuetsu-Oki Earthquake include extraordinary expenses of 161.5 billion yen (122 billion yen for inspection and restoration work, 25 billion yen for engineering and repair of building-related equipment, and 14.5 billion yen in other expenses), as well as 2 billion yen to start up idled thermal plants and 440 billion yen for alternative fuel supplies and electricity purchased from other companies. This brings total predicted expenses resulting from the earthquake to 603.5 billion yen. This does not include work to improve the earthquake resistance of the plant. It is not yet known how much this will cost.

Additional fuel requirements due to the shutdown of the nuclear power plant will include 5.1 billion liters of oil and 1.3 million tons of natural gas.

In the preceding period, TEPCO had raised dividends by 10 yen to 70 yen per share for the first time in 7 years, but it was forced to cut dividends to 65 yen per share this time, while executive remuneration was cut by 10 - 20%. TEPCO will consider cutting salaries for ordinary workers in future, but President Tsunehisa Katsumata said that TEPCO is not considering increasing fees.

On October 31st, the same day as TEPCO's announcement, Chubu Electric announced that it is considering cutting fees in April next year. There are indications that other companies will follow, so it is difficult for TEPCO to raise fees at this time.

It must be remembered that the above estimates are all based on the assumption that the Kashiwazaki-Kariwa nuclear power plant will eventually be restarted. If this assumption proves to be incorrect, TEPCO will be unable to avoid greatly increased electricity generation costs.



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