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Citizens' Nuclear Information Center

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Opposition to Dangerous MOX Fuel

Illustration by Shoji Takagi

Ignoring local opposition, electric power companies are pushing ahead with preparations for the introduction of pluthermal[1] in 2010. So far, Kyushu Electric (Genkai), Shikoku Electric (Ikata), Chubu Electric (Hamaoka) and Kansai Electric (Takahama) have all received approval from local and prefectural governments and have entered into contracts for the fabrication of MOX fuel at Areva's Melox plant in France. Fabrication of the first batch of MOX fuel for Kyushu Electric has been completed and fabrication of the second batch has begun. It appears that production has commenced for the other companies as well. It is expected that more than one company will ship their MOX fuel together to reduce transport costs. At the earliest, shipments could begin next year.

It will be the first shipment since the twin towers came tumbling down on September 11, 2001. Two ships were used for the previous shipments. Security guards armed with light weapons were on board and the two ships protected each other. It is much easier to extract plutonium from unirradiated MOX fuel than from spent nuclear fuel, so prevention of theft of MOX fuel is a cause for concern. We believe the measures adopted before 9.11 are inadequate and want to know what measures have been taken to strengthen security. Unfortunately, since a 2005 amendment to the Reactor Regulation Law relating to protection of nuclear materials, the route and time of shipments, security provisions, and other information about the shipment of MOX fuel are no longer publicly disclosed. We presume that since such information is not available, the shipments themselves will take place under a veil of secrecy.

History of plutonium and MOX shipments

There was strong international opposition to a plutonium shipment that took place between November 1992 and January 1993. In response to this opposition, the Japanese government decided to have its plutonium fabricated into MOX fuel in Europe, rather than ship pure plutonium to Japan. In practice, this MOX fuel was to be used in Japan's fleet of light water reactors (LWR). The reason for this was that Japan was making no progress with its plan to burn its ever-growing plutonium stockpile in fast breeder reactors (FBR). The official policy shift from burning plutonium in FBRs to the LWR "pluthermal" program was confirmed by a Cabinet Decision on February 4, 2007. The impetus for the shift was a sodium leak and fire at the Monju FBR,

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which occurred in December 1995.

The Federation of Electric Power Companies (FEPCO) announced the power companies' pluthermal plans on February 21, 1997 (Table 1). According to these plans the two largest power companies, Tokyo Electric (TEPCO) and Kansai Electric (KEPCO) would start the ball rolling and the smaller companies would follow. By 2010 between 16 and 18 reactors would be burning MOX fuel. MOX would be introduced into TEPCO's Fukushima I-3 and KEPCO's Takahama-4 in 1999, then in 2000 MOX would be introduced into TEPCO's Kashiwazaki-Kariwa-3 and KEPCO's Takahama-3.

Table 1: Plants* Commencing Pluthermal
1997 FEPCO Pluthermal Plan Compared to 2008 Reality

Year	1999	2000	Early 2000s	~ 2010
FEPCO 1997	TEPCO KEPCO	TEPCO KEPCO	TEPCO Chubu Kyushu JAPCO	TEPCO KEPCO Hokkaido Tohoku Hokuriku Chugoku Shikoku J-Power
Reality 2008				Kyushu Shikoku KEPCO Chubu

*This table only shows the names of the power companies to which the plants belong.

TEPCO entered into a contract for the fabrication of MOX fuel at Belgonucleaire's Dessel plant, while KEPCO signed a contract for fabrication at British Nuclear Fuel Ltd.'s (BNFL) MOX Demonstration Plant in Sellafield. The first shipment took place in September 1999.

However, while fuel was being shipped for KEPCO, it emerged that quality control data for the MOX fuel had been falsified. KEPCO had to abandon its plan to use this MOX fuel and its contract with BNFL was cancelled. Moves to repair relations between the companies finally began this year. (BNFL's Sellafield operations are now owned by the Nuclear Decommissioning Authority and managed by Nuclear Management Partners Ltd.) It is reported that discussions will be held and possibly some sort of agreement will be signed when UK Prime Minister Gordon Brown visits Japan in November.

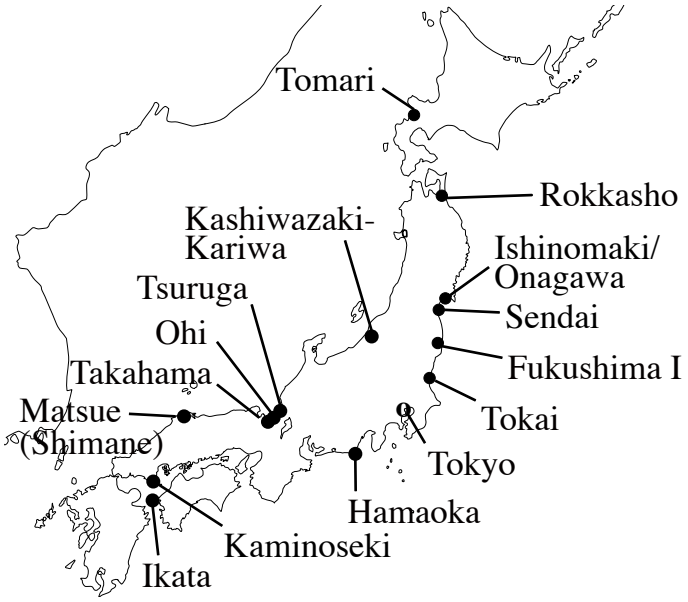
MOX fuel for use in Kashiwazaki-Kariwa-3 was shipped in 2000, but TEPCO's pluthermal plan was rejected in a local referendum held in Kariwa Village in May 2001, after the local opposition movement pressured the local government to stage a referendum on the issue. (There is no legal requirement in Japan for local government approval to be obtained before commencing pluthermal operations, but in practice it is not possible to proceed without it.) In 2002 the Mayor of Kariwa Village began manoeuvres toward approving pluthermal, but that year a scandal broke out relating to TEPCO's concealment and falsification of periodic inspections data. As a result, moves to revive the pluthermal plan ground to a halt.

Beginning with Kyushu Electric, several electric power companies began to move ahead with their pluthermal plans after the Ministry of Economy, Trade and Industry introduced a subsidy system in 2004 for regions which accept pluthermal (see NIT 113). Right now the opposition movement is campaigning to prevent local and prefectural government approval for the pluthermal plans of Hokkaido Electric (Tomari) and Tohoku Electric (Onagawa). Meanwhile, TEPCO's pluthermal plan remains grounded.

Hideyuki Ban (CNIC Co-Director)

1. The term 'pluthermal' refers to the use of plutonium in thermal reactors (i.e. light water reactors), rather than in fast breeder reactors. The fuel is made from a mixed oxide of plutonium and uranium (MOX).

Map of places mentioned in NIT 127



Fuel Loaded into Kashiwazaki-Kariwa Unit 7

All seven reactors of the Kashiwazaki-Kariwa nuclear power plant have been closed since the July 2007 Chuetsu-Oki Earthquake, but Tokyo Electric Power Company (TEPCO) began loading nuclear fuel into Unit 7 on November 8, 2008 with a view to starting system tests. Unit 7 is an Advanced Boiling Water Reactor (ABWR) with an electric power rating of 1,356 MW. It takes a full load of 872 fuel assemblies containing 150 tons of uranium and has 205 control rods. After the earthquake the fuel was removed from the reactor and transferred to the fuel pool. The fact that the same fuel was reloaded shows that a judgment was made that it was still fit for use. Although the formalities are not completely clear, if it is confirmed that the control rods still operate properly and the system tests are successful, the next step will be to carry out criticality tests.

On October 3 the Nuclear and Industrial Safety Agency (NISA) approved TEPCO's report on its assessment of Unit 7 at the level of individual items of equipment. In doing so, it accepted the integrity of Unit 7 at this level. The next step is to see whether the parts operate properly as a total system.

The latest meeting of a Niigata Prefecture sub-committee looking into equipment integrity and earthquake resistance and safety (chairperson Masaharu Kitamura) was held on November 12, but no agreement was reached about the integrity of the plant at the level of individual items of equipment, buildings and structures. Nevertheless, NISA has given the go ahead for system tests. The thinking appears to be that if preparations wait until agreement is reached, the plant will never be restarted. Even if the other six units have to wait, authorities want to show some progress by bringing Unit 7 to the point where it can be restarted. Step by step, keeping an eye on the situation, they are moving ahead. After system checks they will progress to start-up tests, trial operation and then to full operation.

It remains unclear whether the strain on Unit 7 equipment caused by the seismic movement exceeded the elastic range and resulted in plastic deformation (see NIT 125). Everyone, including NISA and TEPCO, agree that it is not possible to measure strain that does not exceed 2%. The only method available is to measure "hardness", but this method is not sensitive enough. It is suspected that strain in this range might exceed the range of elastic deformation.

During the November 12 meeting of the abovementioned subcommittee, cracks in the concrete of buildings at the plant were discussed. Two NISA officers attended the meeting and explained why NISA confirmed the integrity of the Unit 7 equipment. In response to questions by sub-committee members the NISA officers reluctantly admitted that some of the eleven cracks thought to have been caused by the earthquake were produced by plastic distortion. TEPCO tried to avoid the issue by saying vaguely that the conditions under which the cracks appeared were not laboratory conditions, so it could not give precise answers. The fact that NISA went beyond vague answers shows that there was no alternative but to admit that the strain applied to the buildings exceeded the elastic range. It begs the question, what about the machinery? Nevertheless, NISA stuck to its position that there are no safety problems.

Regarding the condition of the ground on which the plant is built, the following claims made by three local anti-nuclear groups are convincing.

1. The shift in the level of the reactor building is not just random error in the data.
2. The ground is not firm enough to support the plant and is still moving as an after effect of the earthquake.
3. There is plenty of evidence to suggest that the Madogasaka Fault has been active since the late Pleistocene Age.

By contrast, the responses by TEPCO and the central government's working group to these and other points are unconvincing. One reason is that the measurement data that TEPCO has submitted to the working group is quite arbitrary. Until questions about the ground on which all seven Kashiwazaki-Kariwa units are built are resolved, the plant should not be restarted.

The Group of Concerned Scientists and Engineers Calling for the Closure of the Kashiwazaki-Kariwa Nuclear Power Plant was established in August 2007. On November 12 this year they submitted demands to Yasuhisa Komoda, Director-General of NISA. They provide detailed evidence about four defects with the deliberations of the various central government committees,

including the above three points. The fourth point related to the above-mentioned concerns about strain. In addition, they pointed out the following two problems.

1. TEPCO originally stated clearly that it would consider Unit 1 (BWR) and Unit 7 (ABWR) first, because they were representative of the two types of reactor at the Kashiwazaki-Kariwa site and because Unit 1 experienced a large seismic movement, while Unit 7 experienced a small movement. However, despite its original statement, TEPCO has prioritized assessment of Unit 7. It has submitted a final report on Unit 7 without even submitting so much as an interim report on Unit 1.
2. In order to assess the integrity of the plant it is necessary to study the overall damage and to make precise comparisons. It is not possible to generalize from analysis of a single unit.

On this basis they demanded that NISA not give permission for the restart of Unit 7. They also demanded a reply from NISA and an opportunity to discuss the matter by the end of November.

In October and November respectively, elections were held for the positions of governor of Niigata Prefecture and mayor of Kashiwazaki City. In each case the incumbent was re-elected. It can be expected that they will continue to adopt a cautious approach, prioritizing the safety and peace of mind of their citizens. It will be particularly interesting to see the approach taken by the mayor of Kashiwazaki, who was re-elected on a platform of local development that is not over-dependent on the nuclear power plant.

Yukio Yamaguchi (CNIC Co-Director)

Haiku for the season

fresh rice
from the earthquake zone
feels heavy

by Rumi Kamishima

Comment: This haiku refers to the first rice crop after the Chuetsu-Oki Earthquake. The area hit by the earthquake is the most famous region in Japan for rice.

Officials Despair of February Monju Restart

On October 22, a meeting of a committee looking into the safety of the Monju Prototype Fast Breeder Reactor (FBR, 280 MWe, Tsuruga City) began with the chairman, Hirotada Ohashi, grumbling that he was left completely in the dark about the delay of the restart of Monju to February 2009. However, as the meeting proceeded, it became clear that most committee members were pessimistic about the chances of Monju restarting in February. The reason was that it will not be possible to address the many problems identified in a special safety inspection by the Nuclear Industrial and Safety Agency (NISA).

NISA's first special safety inspection was carried out in May and June this year and addressed issues including problems with sodium leak detectors (see NIT 126). On July 10, the Japan Atomic Energy Agency (JAEA), the agency responsible for Monju, submitted an action plan responding to NISA's findings and NISA spent September carrying out a second inspection to confirm the status of implementation of the plan. The full report on the second inspection had not been released at the time of the October 22 meeting, but an outline of the results was submitted to the meeting.

The details were extraordinary. For example, it was claimed that JAEA "shows no sign of frankly facing and humbly taking on board opinions from outside the organization". Committee member Etsuko Akiba exclaimed that she felt sad to hear that things were so bad.

Since the special safety inspection, problems continue with the sodium leak detectors. In addition, a hole in an exhaust duct caused by corrosion was discovered. Committee member Shuichi Nita asked, "What is 'comprehensive' about these 'comprehensive inspections'? I want an explanation of the process behind this."

It appears that a rigid organization like JAEA is incapable of restarting Monju.

Hideyuki Ban (CNIC Co-Director)

Rokkasho Reprocessing Plant Never Ending Vitrification Problems

The last stage of active testing of the Rokkasho Reprocessing Plant has been plagued by technical problems. The operator, Japan Nuclear Fuel Ltd. (JNFL), has been unable to produce glass canisters to seal the highly radioactive liquid waste left over after reprocessing spent nuclear fuel.

The vitrification process used at Rokkasho involves mixing HLW with borosilicate glass at high temperatures. Testing of the process began in November 2007, but one year later only 104 canisters have been produced. During that time, the facility has only operated for ten weeks in three rounds of tests. Each round of tests has ended in failure.

Areva's reprocessing plant in La Hague, France uses the "Atelier de vitrification de Marcoule" (AVM) process. This involves two-stages, using furnaces to evaporate off water and nitric acid and crucibles to melt the mixture. The crucibles, which are small, have an operational life expectancy of about 3,000 hours. By contrast, the "Liquid Fed Ceramic Melter" (LFCM) process employed at Rokkasho is a single stage process. The process, which was developed at Japan's Tokai Reprocessing Facility, involves putting highly radioactive liquid waste (HLW) and glass beads directly into kilns, where the glass is melted and mixed with the HLW. The 2m x 2m x 2m kilns used at Tokai are much larger than the La Hague crucibles and they are supposed to have a longer life expectancy - in the order of 5 years. The kilns at Rokkasho have been scaled up further to 3m x 3m x 3m. This has compounded the technical problems encountered at Tokai and also given rise to new problems.

Unstable Operational Temperature

The increased size of the kilns at Rokkasho makes temperature control more difficult. It is necessary to maintain the temperature of the kiln at 1,100 ~ 1,200°C while the HLW and the glass are being mixed. However, JNFL has been unable to keep the temperature stable within this range for extended periods of time.

Accumulation of Platinum Group Metals

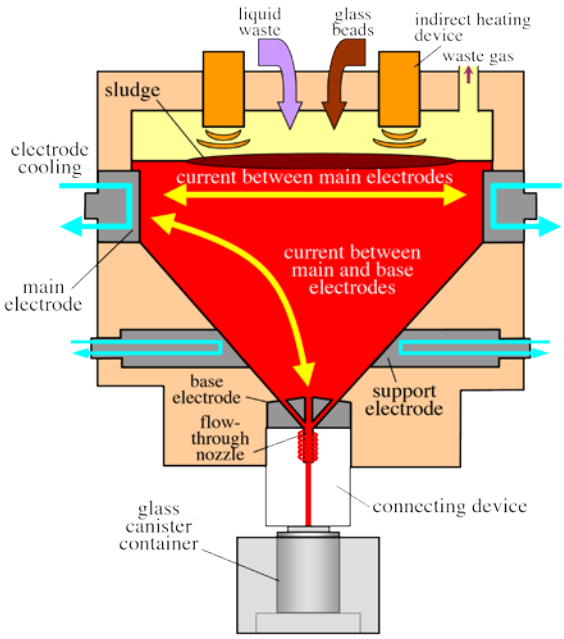
The unstable temperature gives rise to another problem. It becomes difficult to incorporate platinum group metals (palladium, rhodium, etc.) that are contained in the HLW into the glass matrix. Even at the Tokai facility these elements tended to accumulate at the bottom of the kiln and block the flow of molten glass. Problems arose with the flow of molten glass at the Rokkasho Reprocessing Plant after about 40~60 canisters had been produced. The vitrification process was stopped and JNFL spent over six months trying to fix the problem. The solution it came up with was to add a special rod to stir the glass at the bottom of the kiln. If this failed JNFL planned to remove all the molten glass/HLW mixture from the kiln. However, when the tests recommenced in October (third round of vitrification tests) the window for inserting the mixing rod would not open and the tests had to be stopped at the end of the month. Thus every attempt to solve the problems with the vitrification process gives rise to new problems.

Low Viscosity Fluid

In July (second round of vitrification tests) problems associated with low viscosity fluids (molybdenum, etc.) arose when the kiln was started up and the flow of molten glass stopped. The cause is still being investigated and an adequate solution to the problem has not yet been found.

Doubts are now emerging about the ability of the kilns used at the Rokkasho Reprocessing Plant to maintain stable operation for their design life of five years. At the moment tests are being carried out on kiln A. Tests on kiln B have not even begun. Commercial operation of the Rokkasho Reprocessing Plant cannot commence until both these kilns pass their operational tests. As NIT was going to print, JNFL announced that completion of the tests will be further delayed until February 2009.

Masako Sawai (CNIC)



High Active Liquid Waste Vitrification Equipment Outline (Glass Melting Kiln)

Tadashi Kiyuna and Mitsuaki Nagao Workers' Compensation/Damages Claims

Workers' Compensation Awarded to Tadashi Kiyuna!

First ever for malignant lymphoma

As reported in NIT 120 and 126, Tadashi Kiyuna died of malignant lymphoma in March 2005 at the age of 53 after being exposed to radiation through his work at nuclear power plants throughout Japan and at the Rokkasho Reprocessing Plant. An expert committee established by the Ministry of Health, Labour and Welfare recently concluded that there is a causal relationship between malignant lymphoma and worker radiation exposure. On October 27, after receiving the expert committee's report, the Yodogawa Labor Standard Supervision Office in Osaka informed Kiyuna's widow that it had accepted his family's application for workers' compensation. In so doing it overturned its September 2006 decision.

On hearing the news, Kiyuna's wife Sueko expressed her joy and her resolve in the following inspirational words:

"*This result is due to the support of people throughout the whole of Japan. Time has stood still for me since the death of my husband, but it has begun to move again. I feel my strength returning through my whole body. If there are any other people like my husband suffering from cancer due to their exposure to radiation while working at nuclear plants, I would like to support them.*"

So that this success benefits all people exposed to radiation through their work who have been deprived of redress, the following actions should be taken:

1) The circumstances behind the acceptance of Kiyuna's application for worker's compensation for malignant lymphoma should be reported to Labour Bureaus and Labor Standard Supervision Offices throughout Japan;

2) Conditions related to leukemia, such as multiple myeloma (see section on Mitsuaki Nagao below) and malignant lymphoma, should be added to the list of recognized conditions for workers' compensation;

3) The terrible conditions under which Tadashi Kiyuna worked should be exposed;

4) The Ministry of Health, Labour and Welfare should make information available and improve the transparency of deliberative committees in order to expose the hidden truth of worker radiation exposure.

We would welcome any information about the situation in other countries.

Mitsuaki Nagao Appeal: High Court Judge Approaching the Case Positively

The late Mitsuaki Nagao, who died in December 2007 at the age of 82, was the first person to be awarded workers' compensation for multiple myeloma resulting from radiation exposure incurred while working at nuclear power plants (NIT 99). Subsequently, on 23 May 2008, the Tokyo District Court rejected Nagao's claim for damages against Tokyo Electric Power Company (TEPCO) (NIT 125). The first hearing of his family's appeal to the Tokyo High Court was held on October 30.

The second half of the deliberations in the Tokyo District Court focused almost entirely on the diagnosis. There was hardly any discussion of the causal relationship between multiple myeloma and radiation exposure. Nevertheless, District Court Judge Hidetaka Matsui rejected not only the multiple myeloma diagnosis, but also the causal relationship, which had been recognized in the workers' compensation decision. It was an arbitrary verdict touching on issues that weren't even raised by the plaintiff

On October 30, Tokyo High Court Judge Kaoru Aoyagi pointed out that the fact of Nagao's employment at nuclear power plants and the fact that he became sick and received treatment were not in dispute. He went on to state frankly that he suspected that the key issue was the causal relationship between Nagao's work and his illness and that a change of thinking might be necessary. He also pointed out that the court is not a doctor, so it was not appropriate to become fixated on the name of the condition.

After the appalling verdict of the District Court, we welcome the positive attitude shown by the High Court Judge. The question of causal relationship was not adequately addressed in the District Court, so Nagao's legal team intend, based on epidemiological studies, to prove this relationship in the High Court. The second hearing will be held on December 25. We hope there will be lots of interest as the case unfolds.

Mikiko Watanabe (CNIC)

Japanese Inventory of Separated Plutonium at 31 December 2007

Held in Japan (Quantities shown are kgPu. Amounts shown in brackets are for 2006.)

Reprocessing Facilities	JAEA (Tokai)	JNFL (Rokkasho)	Total
Plutonium nitrate etc. (after dissolution up to, but not including, storage in containers as plutonium oxide)	675 (643)	865 (640)	1,540 (1,283)
Plutonium oxide (stored in containers as plutonium oxide)	120 (173)	1,747 (97)	1,867 (270)
Total Plutonium	**795 (817)**	**2,612 (737)**	**3,407 (1,554)**
Total Fissile Plutonium	531 (560)	1,721 (512)	2,251 (1,072)

JAEA Plutonium Fuel Fabrication Plant	
Plutonium oxide (stored plutonium in plutonium oxide containers)	2,764 (2,685)
Plutonium in test or fabrication stage	895 (862)
New fuel etc. (stored as finished fuel assemblies etc.)	303 (297)
Total Plutonium	**3,962 (3,845)**
Total Fissile Plutonium	2,761 (2,680)

Nuclear Reactor Facilities	Joyo	Monju	Fugen	Commercial Reactors	R&D facilities
Nuclear Reactor Facilities (held as new fuel etc.)	126 (128)	367 (367)	0 (0)	415 (415)	444 (444)
Total Plutonium	**1,352 (1,354)**				
Total Fissile Plutonium	1,007 (1,009)				

Total Plutonium	**8,721 (6,753)**
Total Fissile Plutonium	6,019 (4,761)

Held Overseas (Quantities shown are tPuf. Amounts shown in brackets are for 2006.)

Recovered in UK	11.3 (11.4)
Recovered in France	13.9 (14.0)
Total	**25.2 (25.3)**

NB: Figures only available for fissile plutonium held overseas. Note that the quantity is shown in tons.

Separated plutonium in use from January-December 2007 (kgPu)

Reprocessing Plant	JAEA (Tokai)	JNFL (Rokkasho)	Total
Putonium oxide recovered	77 (176)	1,650 (97)	1,727 (273)

	Monju, Joyo, Fugen, etc.
Plutonium in fuel fabrication processes	53 (1)
Plutonium loaded in nuclear reactors	23 (57)

2007 Balance of Separated Plutonium Held in Japan

	Total (kgPu)
Plutonium separated at reprocessing facilities	1,991
Plutonium loaded into reactors	- 23
Variation in processes at each facility	0
Balance	**1,968**

JAEA Reprocessing Facility (Tokai) (from separation & purification process to storage of raw materials)		
Items		**Increase/Decrease**
Inventory as of 1 January 2007 (end 2006)		817
Total amount of plutonium separated in 2007		111
Total amount of plutonium shipped out in 2007		- 130
Variation in processes at reprocessing facilities		- 2
Detailed breakdown	Transfer to retained waste	- 4.5
	Retransfer from retained waste	1.9
	Nuclear loss	- 1.6
	Measured discard	- 3.4
	Material unaccounted for (MUF)	5.3
Inventory as of 31 December 2007		795

JAEA Plutonium Fabrication Facility (from mixed oxide powder (MOX) raw material to fuel assembly products)		
Items		**Increase/Decrease**
Inventory as of 1 January 2007 (end 2006)		3,845
Total amount of plutonium received in 2007		130
Total amount of plutonium shipped out in 2007		- 21
Variation in processes at fuel fabrication facilities		8
Detailed breakdown	Shipper/receiver difference	0.0
	Transfer to retained waste	- 0.1
	Retransfer from retained waste	9.4
	Nuclear loss	- 1.5
	Material unaccounted for (MUF)	0.2
Inventory as of 31 December 2007		3,962

Nuclear Reactor and other Facilities (Joyo, Fugen, Monju, Commercial Reactors, R&D Facilties)	
Items	**Increase/Decrease**
Inventory as of 1 January 2007 (end 2006)	1,354
Total amount of plutonium received in 2007	21
Total amount of plutonium loaded in nuclear reactors during 2007	- 23
Invenrtory as of 31 December 2007	1,352

JNFL Reprocessing Facility (Rokkasho) (from separation & purification process to storage of raw materials)		
Items		**Increase/Decrease**
Inventory as of 1 January 2007 (end 2006)		737
Total amount of plutonium separated in 2007		1,880
Total amount of plutonium shipped out in 2007		0
Variation in processes at reprocessing facility		- 6
Detailed breakdown	Transfer to retained waste	- 1.3
	Retransfer from retained waste	0
	Nuclear loss	- 2.7
	Measured discard	- 0.2
	Material unaccounted for (MUF)	- 1.3
Inventory as of 31December 2007		2,612

Comments on 2007 Separated Plutonium Inventory

The separated plutonium inventory for 2007 was released by the Atomic Energy Commission (AEC) on September 9, 2008. We expect that an official English translation will be posted on the following page of AEC's website in due course: http://www.aec.go.jp/jicst/NC/iinkai/teirei/siryo2008/siryo39/tei-si39.htm

AEC took over responsibility for accumulating this data from this year. Apparently as a result of the shift of responsibility to AEC, this year figures for plutonium held overseas were only disclosed in tons to the first decimal place (i.e. rounded to the nearest 100kg). In the past figures have been given to the nearest kilogram. CNIC has demanded that AEC explain why it has not published kilogram values this year and that it promptly disclose this information. It is an unfortunate step backwards after the improvements in information disclosure elicited by CNIC over the last two years.

Since 2006, figures for overseas plutonium holdings have only been given for fissile plutonium. Total plutonium has not been given. The slight reduction in fissile plutonium held overseas is due to decay of plutonium-241 to americium-241.

Meanwhile, plutonium held in Japan increased substantially in 2007. Most of the increase was plutonium separated during active testing of the Rokkasho Reprocessing Plant.

Hideyuki Ban (CNIC Co-Director)

continued from page 10 understand why he would take up surfing when the sea was polluted by active testing at Rokkasho, but for him that was all the more reason to support surfers campaigning against the Rokkasho Reprocessing Plant. As for growing vegetables, his friends in the Stop Rokkasho campaign inspired him to start that too.

He's a man of action who strikes while the iron's hot. When other people would say they are too busy, he goes to it regardless. That's what makes him so incredible. However, even though he has his own ideas and does so much himself, he shows great respect for the opinions of others, in particular those who have been campaigning for many years against the nuclear fuel cycle.

We were always inclined to think, "I can't do anything on my own", or "I'm too busy with other things", but Hokuto came along and showed us that these were just excuses. This is the impact of Hokuto Muto, inspiring me again today to keep up the fight in Sendai.

**Akihiro Tatewaki is a member of the "Sendai Committee to Protect the Sanriku-Miyagi Sea from Radiation", also known as the "Wakame Committee". (Wakame is a type of edible seaweed.)*

Anti-Nuke Who's Who

The Impact of Hokuto Muto

by Akihiro Tatewaki*

I first met Hokuto Muto in September 2006 at a viewing of the film "Rokkasho Rapsody" hosted by a group called "With the Earth". It might sound like a very global group, but actually it is a homely local group run by Hokuto. It does such things as host film nights and public meetings. At the time, a new movement against the Rokkasho Reprocessing Plant was emerging in Sendai (Miyagi Prefecture). Active testing of the plant began in March 2006. In neighboring Iwate Prefecture, where until then there hadn't been much opposition, concerns erupted during a public hearing. People were worried that the sea would be polluted with radioactivity. These concerns spread to Miyagi Prefecture, where old-hands and newcomers to the movement joined forces. One of the outcomes was the formation of the "Wakame Committee"*, which began a signature campaign and held public meetings and film nights.

Wakame Committee members heard that someone in the town of Ishinomaki was organizing a film night by himself, so we decided to go and support him. That was where I met Hokuto. Film nights are hard work even in Sendai, where we have lots of members to help out, so we marveled at the gumption of someone who was willing to take on the task by himself. It came as a surprise then when Hokuto turned out to be a short round-eyed youth. On a good night in Sendai we might manage to get 250 people to a film night, but the population of Sendai is ten times that of Ishinomaki, so we were very impressed when 100 people turned out. Hokuto's smiling face at the party afterwards with Director Hitomi Kamanaka sticks in my mind.

But this film night was just a prelude to Hokuto's subsequent activities. In the two years since, he has hosted seven film nights showing sequels of Rokkasho Rapsody, each time with high-profile guests. He also holds regular discussion meetings. In addition, he became a member of a Miyagi Prefecture committee looking into food safety. From a consumer's perspective, he presses the committee to consider the impact on Miyagi Prefecture of radioactive pollution from the Rokkasho Reprocessing Plant.

Besides these local activities, he is also

spreading the message throughout Japan via his blog and the "mixi" internet network. In January, when he came down to Tokyo for his first ever demonstration, he found that many of the people there were already communicating with him through mixi. It made me jealous to see how popular he was with the young women.

Some of us worried that he was going overboard. We thought he couldn't possibly continue at this rate. What about his family? But observing him over the last year, including glimpses of other sides of his life besides activism, I have come to realize that Hokuto is not the type to just fade away.

He is married with two children and works for a prawn company. His partner and parents don't complain as long as he holds down a steady job. In fact, they support him in his activism. I can vouch for the quality of his partner's macrobiotic food. One of the secrets of this domestic bliss is his policy of not watching TV at meal times and prioritizing communication instead. In that way he also avoids wasting electricity, thus undermining the argument for building more nuclear power plants.

When he gets interested in something, he goes all out. To my knowledge, he is seriously into photography, surfing and growing vegetables. He certainly takes good photos. As for surfing, he started at the suggestion of surfers he met through the Stop Rokkasho campaign. His friends couldn't

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NEWS WATCH

Plan to double nuclear indemnity requirements

On October 17 the first draft report on Japan's nuclear liability system was endorsed by a study committee established within the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The report has now been opened for public comments and it is expected that it will be finalized late November.

The draft report recommends doubling the value of insurance required of nuclear enterprises (nuclear power companies, reprocessing companies, etc.) in the form of contracts with insurance companies or indemnities provided by the government to cover compensation claims. Taking into account the level of insurance required in Europe, it recommends that the value be increased from 60 billion yen to 120 billion yen per plant for nuclear power plants and reprocessing plants. The value for other facilities varies.

Under the Japanese system, nuclear enterprises are liable for damages that exceed the insured value, except in cases of "damages caused by extremely large natural disasters and civil disturbances". However, under the nuclear accident compensation law the government is able to provide direct financial support and low interest finance when damages exceed the insured value.

Permission given to reclaim sea for Kaminoseki Nuclear Power Plant

On October 22, Governor Sekinari Nii of Yamaguchi Prefecture handed a document to Takashi Yamashita, President of Chugoku Electric Power Company, granting approval for an area of sea to be reclaimed in preparation for construction of the proposed Kaminoseki Nuclear Power Plant (2 x 1, 373MW, ABWR). Around 140,000m^2 of the 330,000m^2 site is located in an area that is now sea. The plan is extraordinary in that the reactor itself will be located in this area.

The area of sea that will be reclaimed is an ideal fishing ground for the fishermen from the island of Iwaishima off the Kaminoseki coast (see NIT 125). It is also a confirmed habitat for many rare and endangered species (NIT 84). Many residents of Yamaguchi Prefecture are opposed to the reclamation and 74 Iwaishima fishermen had only just lodged an appeal on October 20 to the Yamaguchi District Court to prevent approval being granted. Prior to that, on October 16, a petition signed by over 50,000 people had been handed to Governor Nii. At the press conference Governor Nii said, "I was certainly not pleased to grant approval." He justified himself by saying that if the requirements are met "the Prefecture has to make its judgment according to law." To Chugoku Electric President Yamashita he said, "I request you to exert your utmost effort to ensure safety and protect the environment."

Ohi-3 to be restarted without being repaired

As reported in NIT 126, during a periodic inspection of Kansai Electric Power Company's (KEPCO) Ohi-3 nuclear power plant (1,180MW, PWR) a crack was found in a weld in a primary coolant outlet nozzle in the reactor vessel. On September 26, KEPCO informed the Nuclear Industrial and Safety Agency (NISA), Fukui Prefecture and the Ohi local government that it would restart the reactor without repairing the area where it had ground down to remove the crack. Because the area where the crack was located is highly radioactive, repairs require special techniques and tools have to be prepared. KEPCO plans to wait until the next periodic inspection in autumn 2009 to carry out build-up welding. NISA and the prefecture's expert safety committee blithely approved this plan.

Fire at Onagawa-1

On November 13 a fire broke out in a pump room in the residual heat removal system of the Onagawa-1 reactor (BWR, 524MW). The fire lasted nearly an hour and one worker was injured.

The fire was caused by a spark from welding carried out during work to increase the reactor's

seismic resistance. Onagawa-1 has been undergoing a periodic inspection since February 14.

The operator, Tohoku Electric Power Company, said that there was no radiation leak.

JAEA, EDF to cooperate on fast reactors

On October 1, Japan Atomic Energy Agency (JAEA) and Electricite de France (EDF) signed an agreement concerning technical cooperation on fast reactor systems. The agreement revised a previous agreement, which covered operation and maintenance of fast reactors. The new agreement expands the scope of cooperation to include fast reactor systems. EDF technologists will be able to train at the Monju prototype fast breeder reactor (280 MW) and the Joyo experimental reactor. Information exchange regarding design concepts for future demonstration reactors and commercial reactors is also covered by the agreement.

Agreement for cooperation between JAEA and KAERI

On September 4, Japan Atomic Energy Agency (JAEA) and Korea Atomic Energy Research Institute (KAERI) signed an agreement relating to cooperation on research into the "peaceful" use of atomic energy. Previously KAERI had agreements with Japan Atomic Energy Research Institute (JAERI) for cooperation on research into the "peaceful" use of atomic energy and with Japan Nuclear Cycle Development Institute (JNC) for cooperation on research and development relating to geological disposal of high-level radioactive waste. JAERI and JNC have since merged to form JAEA, so the old agreements have been adjusted to fit the new organizational structure. The range of cooperation is broad, covering nuclear research, development and utilization.

BTC to accept trainees from the US

BWR Operator Training Center Corp. (BTC) was established by boiling water reactor (BWR) makers Toshiba and Hitachi GE Nuclear Energy and Japanese power companies operating BWRs. In July, BTC received five technologists from South Texas Project (STP) Nuclear Operating Company for training with ABWR operator instructors. It plans to accept more trainees in future.

STP has been selected to manage the construction and operation of two ABWRs for the independent power producer NRG Energy Inc.'s proposed South Texas Project Units 3 and 4. BTC also plans to accept trainees from the US Nuclear Regulatory Commission.

In the Japanese market, in addition to its existing training programs for operators, it is diversifying through the development of training programs for plant maintenance workers. In this way it hopes to stem a downward trend in enrolments.

Nuclear energy seminar and exhibition in Vietnam

From September 4~6, Japan Atomic Industrial Forum (JAIF) and Japan External Trade Organization (JETRO), in association with Vietnam Electricity (EVN) and Vietnam Atomic Energy Commission (VAEC), held a seminar and exhibition on nuclear energy in Phan Rang, Ninh Thuan Province. (Phan Rang is just south of Cam Ranh Bay, which was used as a naval base by a succession of foreign powers.) About 3,000 people attended the exhibition, while 650 people attended the seminar.

On September 3, a national nuclear power assessment committee was established within the Ministry of Planning and Investment (MPI). Vietnam plans to construct nuclear power plants with a total capacity of 4,000 MW by 2020. Two sites have been selected in the south-eastern Province of Ninh Thuan. Some of the Japanese participants in the above seminar and exhibition visited these two sites.

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