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Stop MOX Shipments!

Pacific Pintail

A shipment of MOX (mixed plutonium and uranium oxide) fuel bound for Japan left the port of Cherbourg in France on March 5. As predicted, the ships (PNTL's Pacific Pintail and Pacific Heron) will go around South Africa, through the Tasman Sea between Australia and New Zealand and up through the islands of the Pacific.

None of this information was going to be released. On November 18, 2008, a Kyodo News article said, "The Federation of Electric Power Companies of Japan will basically stop releasing the names of freighters carrying MOX fuel, made from spent nuclear fuel, as well as shipping routes, and departure and arrival dates until transportation is complete...." However, on January 28, Areva issued a press release saying, "The hour of departure from Europe to Japan, as well as the maritime route to be used, will be made public the day after the departure." We suspect that the level of secrecy was relaxed because of complaints by en-route countries about the lack of information.

We understand that this shipment is carrying a cargo of 1.7 tons of plutonium in 69 assemblies of MOX fuel. That makes it the biggest plutonium shipment ever. There was a shipment of 1.5 tons (Pu total) in the form of plutonium dioxide powder from France on the Akatsuki Maru in 1992. That shipment aroused massive protests from en-route countries. Since then, there have been two shipments carrying plutonium from France and the UK. These shipments were carried out in 1999 and 2001 and the plutonium was in the form of MOX fuel. The MOX fuel from the UK was shipped all the way back in 2002 after it was revealed that quality control data for had been fabricated. None of the plutonium shipped from Europe has ever been used.

The MOX fuel being shipped this time is for Kyushu Electric's Genkai-3 reactor (PWR, 1,180 MW) in Saga Prefecture (20 assemblies), Shikoku Electric's Ikata-3 reactor (PWR, 890 MW) in Ehime Prefecture (21 assemblies), and Chubu Electric's Hamaoka-4 reactor (BWR, 1,137 MW) in Shizuoka Prefecture Prefecture (28 assemblies). The assemblies are transported in casks, which weigh around 100 metric tons each, including the fuel assemblies. They will be off-loaded directly at the ports alongside the Genkai and Ikata plants and at the Omaezaki port, about 3 kilometers from the Hamaoka plant.

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This is the last printed edition of CNIC's English newsletter, Nuke Info Tokyo. We will continue to publish pdf and html versions of NIT on our web site.

If this shipment goes smoothly and, unlike previous occasions, the fuel is loaded into reactors, it can be expected that it will be the first of many such shipments. There is around 38 tons of plutonium held in Europe and the Japanese power companies are obliged to take it all back. At a time when the threat of terrorism, including ship hijackings, has reached unprecedented proportions, shipping all this plutonium around the world represents an unacceptable security risk. On this occasion the two ships each have guns and are supposed to be able to protect each other, but we doubt the effectiveness of the security measures.

There are three possible routes, excluding the Suez Canal: through the Panama Canal, around Cape Horn in South America, and around the Cape of Good Hope in South Africa up through the Pacific (the "Pacific route"). As part of a campaign led by Kyoto-based Green Action, CNIC staff joined other activists in visits to embassies of potential en-route countries to encourage them to lodge protests with the Japanese government. We were impressed by the depth of concern felt by many of these countries.

Shipping a cargo of plutonium through the Panama Canal presents particularly grave security risks and Chile and Argentina are viscerally opposed to shipments around Cape Horn. Chile has a law outlawing such shipments through its Exclusive Economic Zone (EEZ). It has even dispatched a gunboat to force vessels carrying radioactive waste out of its EEZ. Most of the countries we visited along these two routes were vehement in their opposition to these shipments. They have been inflicted with repeated shipments of high-level radioactive waste so they are very of aware of the issue. The Jamaican representative said that they constantly mention the issue in discussions with the Japanese government.

That leaves the Pacific route, the route taken by previous plutonium shipments. Pacific Island states varied in their responses to our representations. We got the impression that the Japanese government and power companies had gone to great lengths to suppress the opposition of some of these countries. For others, however, no amount of arm-twisting could bring them round. The whole economy of island states such as Micronesia depends on fishing and tourism. They are well aware that the damage to their reputation by even a very small accident could be devastating.

There are serious concerns about safety. Transport casks must be able to withstand a 9-meter drop without a nuclear chain reaction ("criticality") occurring, even if the transport cask leaks and the fuel is immersed in water. (Expansion of the fuel pin lattice and the presence of water increase the chance of criticality.) The criticality assessment assumes that the fuel assemblies are in sound condition. However, MOX fuel produces heat and reaches as much as 300°C during transportation. Heat weakens the fuel assemblies, but this is not adequately reflected in the criticality assessment.

The Japanese government's response is that the five operators of pressurized water reactors and Nuclear Fuel Transport Co., Ltd. carried out drop-tests on a cask containing one full size fuel assembly. (The fuel pellets themselves were replaced by a lead-based alloy.) Although this mock-up assembly was not subjected to 300°C temperature, the assessment of the test results took into account the effects of heat-induced weakening. The companies concluded that the amount of deformation was insufficient to give rise to criticality, but given the artificial nature of the assessment, doubts remain.

There are also problems with other standards that these shipments are required to meet. The International Atomic Energy Agency' (IAEA) Regulations for the Safe Transport of Radioactive Material (2005 Edition) require that transport containers be exposed to a thermal environment equivalent to a 800°C fire for 30 minutes. They must also undergo a water immersion test "under a head of water of at least 15 m for a period of not less than eight hours". An "enhanced water

Cartoon by Shoji Takagi (published in Fiji newspapers in 1999)

immersion test" requires that they be immersed "under a head of water of at least 200 m for a period of not less than one hour". Clearly these tests do not reflect the worst-case conditions of a fire on board the ship or if the ship sank.

The following quote from a letter by the late Paul Leventhal, former President of the Nuclear Control Institute, shows that these are realistic scenarios that should be taken into account. The letter, dated December 22, 1997, was sent to en-route countries concerning an imminent shipment of intensely radioactive waste from France to Japan.

> The hazards of shipping radioactive material by sea are very real. Last month, a container ship carrying highly radioactive cesium was split in two in a storm in the Atlantic Ocean. The fore section went to the bottom with its cesium packages. French regulatory authorities acknowledged the cesium containers would rupture at 3,000 meters, the depth at which the wreckage finally came to rest, but also announced they would not salvage the radioactive cargo. Lloyd's List, a shipping-trade newspaper, editorialized that the sinking of the ship, the MSC Carla, is "a stark reminder of what can be done by the sheer force of the elements upon a ship which, when she was built, was the last word in strength and power."

In our visits to Embassies we suggested actions that en route countries could take. The following suggestions were based on a 28 May 2006 Greenpeace briefing, "Nuclear Transport Briefing to the ACP Council of Ministers", Port Moresby, 28 May - 2 June:

• call for a moratorium on all shipments of nuclear fuel and nuclear waste until a regime is in place which ensures the protection of the marine environment and the environment, economy and population of coastal states;

• investigate alternative measures to protect coastlines, populations, environment and economies, including full environmental impact assessment, prior notification, emergency contingency plans, and assurance that shipping states will not transit the EEZ of coastal states;

• protest the lack of suitable security and demand full security from attacks;

• demand the development of a fully adequate liability and compensation regime.

This MOX shipment is part of Japan's failed nuclear fuel cycle program. The government's claim that plutonium will be consumed in Japan's light water reactors is used to justify the Rokkasho Reprocessing Plant. Blocking this and future MOX shipments will not only protect en route states and the marine environment, it will also help bring an end to Japan's unsustainable, uneconomic, unsafe and proliferation-prone plutonium program.

Philip White (NIT Editor)

Plutonium Utilization Plans for FY 2009

Page 4 shows a translation of a table released on March 6, 2009 by the Federation of Electric Power Companies (FEPCO). As noted in previous years, these plutonium utilization plans are essentially meaningless. There is no indication of when the plutonium separated at the Rokkasho Reprocessing Plant will be used up. The sole purpose of the plans is to create an alibi to justify the operation of the plant.

FEPCO only released the plutonium utilization plans of Japanese utilities. In addition to these, the Japan Atomic Energy Agency (JAEA) also released a plutonium utilization plan on the same day. JAEA's projected quantity of plutonium held at the end of FY 2008 was 3.6 tons fissile plutonium (Puf), of which 0.7 tons Puf was held in the form of new fuel assemblies. The projected quantity of plutonium held at the end of FY 2009 is also 3.6 tons Puf. The projected quantity to be used annually is 0.1 tons Puf in the Joyo experimental fast reactor and 0.5 tons Puf in the Monju fast breeder reactor. JAEA predicted that it would take 6 years to use the plutonium from the time each reactor restarts.

Meanwhile, due to problems with the vitrification facility, the Rokkasho Reprocessing Plant has not produced any plutonium since October 2008. The amount of "plutonium product" produced so far at Rokkasho is 6,656 kg. Since this "plutonium product" is calculated as the metal component of the MOX product (mixed oxide of uranium and plutonium), the amount of plutonium is roughly half this figure. (Note: JNFL's monthly reports do not give figures for fissile plutonium.)

Philip White (NIT Editor)

Federation of Electric Power Companies of Japan (6 March 2009)

Utilization Plan for Plutonium Recovered at Rokkasho Reprocessing Plant (Fiscal Year 2009)							
Owner	**quantity to be reprocessed *1**	**quantity held *2**			**purpose (to be used as fuel for Light Water Reactors) *3**		
	quantity of Spent Nuc. Fuel planned to be reprocessed in FY09 (tons U) *4	projected quantity of Pu held at end FY08 *5 (tons Puf) *6	projected quantity of Pu to be recovered in FY09 (tons Puf) *6	projected quantity of Pu held at end FY09 *7 (tons Puf) *6	reactor(s) to utilize recovered Pu	projected quantity to be used annually *8 (tons Puf/year) *6	time planned to start using Pu *9, and approximate time required to use Pu *10
Hokkaido	14	0.1	0.0	0.1	Tomari N.P.P. reactor 3	0.2	In or after FY2012 about 0.5 years equivalent
Tohoku	-	0.1	0.0	0.1	Onagawa N.P.P. reactor 3	0.2	In or after FY2012 about 0.5 years equivalent
Tokyo	61	0.8	0.3	1.1	On the basis of attempting to recover the trust of local residents, plan to utilize 3 to 4 reactors belonging to TEPCO.	0.9-1.6	In or after FY2012 about 0.7 to 1.2 years equivalent
Chubu	16	0.2	0.1	0.2	Hamaoka N.P.P. reactor 4	0.4	In or after FY2012 about 0.6 years equivalent
Hokuriku	3	0.0	0.0	0.0	Shika N.P.P.	0.1	In or after FY2012 about 0.1 years equivalent
Kansai	12	0.5	0.2	0.7	Takahama N.P.P. reactors 3 & 4, plus 1 or 2 reactors at Ohi N.P.P.	1.1-1.4	In or after FY2012 about 0.5 to 0.7 years equivalent
Chugoku	11	0.1	0.0	0.1	Shimane N.P.P. reactor 2	0.2	In or after FY2012 about 0.6 years equivalent
Shikoku	19	0.1	0.0	0.2	Ikata N.P.P. reactor 3	0.4	In or after FY2012 about 0.4 years equivalent
Kyushu	18	0.3	0.1	0.5	Genkai N.P.P. reactor 3	0.4	In or after FY2012 about 1.1 years equivalent
JAPCO	5	0.1	0.1	0.2	Tsuruga N.P.P. reactor 2, Tokai 2 N.P.P.	0.5	In or after FY2012 about 0.4 years equivalent
sub total	**160**	**2.3**	**0.9**	**3.2**		**4.4-5.4**	
J-power		Will be tranferred from other utilities *11			Ohma N.P.P.	1.1	
Grand Total	**160**	**2.3**	**0.9**	**3.2**		**5.5-6.5**	

More details will be added as the pluthermal program proceeds and the MOX fuel fabrication plant comes on line.

*1. The 'quantity of Spent Nuclear Fuel planned to be reprocessed' is in accordance with the reprocessing plan put together by Japan Nuclear Fuel Limited (JNFL)..

*2. Listed under the 'quantity of Pu held' are the quantity of plutonium that is projected to be held by each company at the end of FY2008, the quantity projected to be recovered at the Rokkasho reprocessing plant in FY2009, and the total of these two quantities, which is the quantity projected to be held at the end of FY2009. The recovered plutonium will be allocated to each electric power company in proportion to the amount of fissile plutonium contained in the spent nuclear fuel they sent to the Rokkasho Reprocessing Plant. Consequently, plutonium may be allocated to some companies whose plutonium was not actually reprocessed in that year. However, when all spent fuel has been reprocessed, the amount of plutonium allocated to each company will correspond to the amount of fissile plutonium contained in the spent fuel that they sent for reprocessing.

*3. Besides the amount to be used in LWRs, some plutonium will be transferred to JAEA to be used in their research projects. The amount to be transferred from each power company to JAEA will be announced when it is decided.

*4. Figures are rounded, so totals do not add up in some places.

*5. On 29 May 2008, JNFL released a “Report concerning revised work plan for the reprocessing facility” . Based on acutal results, the quantity of spent fuel reprocessed in FY 2007 was reduced from 210 tons U to 181 tons U. Then on 25 November 2008, JNFL released another “Report concerning revised work plan for the reprocessing facility” in which the quantity to be reprocessed in FY 2008 was reduced from 395 tons U to 150 tons U. On 29 January 2009, JNFL released another “Report concerning revised work plan for the reprocessing facility” , which reduced the quantity from 150 tons U to 104 tons U. The figure shown here reflects these revisions. Therefore, the figure differs from the figure shown in the Federation of Electric Power Companies’ 7 March 2008 “Utilization Plan for Plutonium Recovered at Rokkasho Reprocessing Plant (Fiscal Year 2008)” shown in for “projected quantity of Pu held at end FY08” (3.9 tons Puf).

*6. The 'amount of plutonium to be allocated' is shown in terms of fissile plutonium. The amount allocated to each company is rounded to the first decimal place, so in some cases a value of 0.0 is shown.

*7. 'Projected quantity of Pu held at end FY09' equals 'projected quantity of Pu held at end FY08' plus 'projected quantity of Pu to be recovered in FY09'. Figures are rounded to the first decimal place, so the totals do not add up in places.

*8. The 'projected amount to be used annually' shows the amount of plutonium contained in MOX fuel to be loaded according to the plans provided by each electric power company, adjusted to a yearly basis. In some cases the amount of plutonium to be used includes plutonium recovered overseas.

*9. The 'time planned to start using Pu' is after 2012, when the planned MOX fuel fabrication plant, located next to the Rokkasho Reprocessing Plant, is planned to start operating. Until the MOX plant commences operations, recovered plutonium will be managed and stored at the Rokkasho reprocessing plant in the form of uranium-plutonium mixed oxide powder.

*10. The 'approximate time required to use Pu' is calculated by dividing the 'projected quantity of plutonium held at end FY09' by the 'projected quantity to be used annually'. (Note that because some plutonium is to be transferred to J-Power and JAEA, and because in some cases 'the quantity to be used' includes plutonium stored overseas, the actual time taken might not match the span shown here.

*11. The amount to be transferred from other power companies to J-Power will be announced after it has been decided.

KK-7: To Restart or Not To Restart
Will science be sacrificed for the sake of national policy?

1. Moves to restart KK-7

Of the seven reactors at the Kashiwazaki-Kariwa Nuclear Power Plant (KK), all of which have been shut down since the Chuetsu-Oki Earthquake in July 2007, Unit 7 (ABWR, 1356 MW) is said to have suffered least damage. On February 18 the Nuclear Safety Commission (located within the Cabinet Office) approved the restart of this reactor. The following day Tokyo Electric Power Company (TEPCO) applied to Kashiwazaki City, Kariwa Village and Niigata Prefecture for permission to restart the reactor. It appears that it wants all the necessary approvals in place by March 31, the end of the fiscal year.

However, things are not going as TEPCO planned. A fire in Unit 1 on March 5 increased the concerns of the local residents. This is the eighth fire since TEPCO began work in preparation for restart. The cause on this occasion was that workers had not received training about the danger of inflammable vapor in the area. Residents are very critical of TEPCO. They say that TEPCO's claim that it places top priority on safety is an empty slogan and that it is not qualified to operate nuclear reactors. On March 11 Niigata Governor, Hirohiko Izumida, said that he would not give his approval for restart of KK Unit 7 until the appropriateness of TEPCO's plan to revise its fire prevention system is accepted. He indicated that he did not think public understanding for restart had been obtained. Kashiwazaki Mayor, Hiroshi Aida, and Kariwa Mayor, Hiroo Shinada expressed similar sentiments.

2. Jumping the gun

On March 8 Niigata Prefecture's technical committee on safety control of nuclear power plants held its third meeting since the Chuetsu Oki Earthquake. It agreed that a chairman's opinion supporting restart should be presented at the next meeting, scheduled for March 18. However, the March 8 meeting was sadly lacking in scientific and technical debate and failed to answer scientifically based questions raised by committee members opposed to restarting KK-7. The reason for the unscientific nature of the discussion was that it was based on a sloppy summary of issues debated in two technical subcommittees, when the deliberations of these subcommittees have not even been concluded.

3. Unresolved problems

At this stage, debate over three serious problems has not been resolved.

(1) KK's seismic safety

TEPCO, the Nuclear and Industrial Safety Agency (NISA) and the Nuclear Safety Commission (NSC) argue that it is sufficient to set the magnitude of the design-basis earthquake at M7.0. NISA and NSC approved restart of Unit 7 on this basis. (By comparison, the Chuetsu-Oki Earthquake was M6.8 on the Japanese scale.) However, some scientists have said that this is inadequate. They believe a M7.5 earthquake should be chosen. Although they have provided clear scientific evidence, their arguments have been ignored.

The issue relates to questions about the seismic fault plane that caused the Chuetsu-Oki Earthquake and the form of the marine terrace running from Kashiwazaki to Niigata. The critics claim that the F-B fault (see map on page 6) was not the source of the Chuetsu-Oki Earthquake. They say the source was the much longer Eastern Boundary Fault of Sado Basin. Historically, this fault has moved repeatedly and it has had a fundamental influence on the form of the marine terrace in the region. There is no scientific basis for refuting this argument.

The basic earthquake ground motion was set at 2,300 Gal for Units 1~4 and 1,209 Gal for Units 5~7 on the basis of a M7.0 earthquake, but these levels are clearly inadequate.

(2) Irregular movement of reactor and turbine buildings

The ground level has been measured on three occasions since the earthquake, but each time the direction and size of the inclination of the buildings was different. This shows that the plant was not built on firm ground. The fact is that the ground beneath the buildings is moving. As explained in NIT 128, it is as if the nuclear power plant was "floating on a cup of starch".

The seismic safety guidelines in force when the plant was constructed (the old guidelines) required that nuclear power plants be constructed on firm ground. The construction of KK violated these guidelines. The excuse is given that the inclination is within the permitted limits and will not interfere with insertion of the control rods, but this avoids the real issue. Can the plant withstand the next

earthquake? Why does the ground continue to move in this irregular way? As long as scientific answers to these questions are not found, residents will not have confidence in the safety of the plant.

At the beginning of March a research team from Niigata University carried out a second boring near the plant. (A photo of the first boring is shown on page 1 of NIT 128.) Results have just come in and there is a difference of 20 meters between the Niigata University team's measurement and TEPCO's measurement of the Nishiyama stratum. This suggests fault activity, contrary to the analysis of the ground structure around the KK plant carried out by TEPCO and accepted by the government. My view is that this is because KK is indeed "a nuclear power plant floating on a cup of starch".

(3) Can the casing of the reactor coolant recirculation pump motor survive the next earthquake?

KK-6&7 are Advanced Boiling Water Reactors (ABWR). This type of reactor has internal recirculation pumps. ABWR reactors have 10 recirculation pumps, which are welded onto the bottom of the wall of the reactor vessel. There are concerns that during an earthquake in excess of M7 the casing within which the recirculation pump motors are contained could buckle and break.

The stress applied by a M7 earthquake is calculated to be 195 megapascals. By comparison, the design standard is 207 megapascals. That means there is a leeway of just 6%, suggesting that the casing would not withstand a M7.5 earthquake. There is a danger that it could break off. In such a case, the reactor coolant would drain out leading to a major accident.

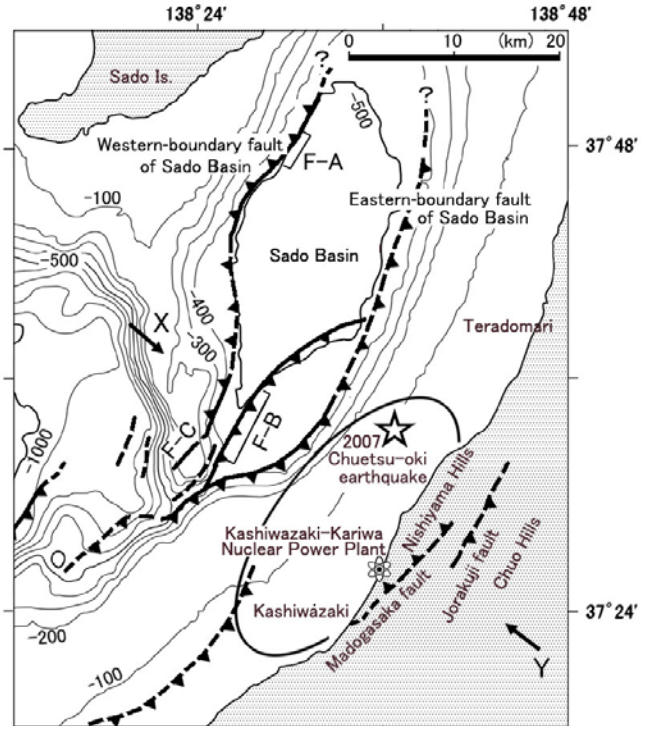
Considering the abovementioned unresolved issues, TEPCO should not be allowed to restart KK Unit 7. To restart the reactor would be a huge gamble. It would fly in the face of the safety-first principle.

4. Radioactive pine needles

Measurements commissioned by CNIC of radioactive carbon-14 in the needles of pine trees growing by the Kashiwazaki-Kariwa Nuclear Power Plant raise questions about how much radioactivity was actually released during the Chuetsu-Oki Earthquake. Pine needles which grew in 2007, the year of the Chuetsu-Oki Earthquake, on trees in TEPCO's public relations center had elevated specific activity of carbon 14 (294.8 mBq/gC from 2007 pine needles compared to 251.2 mBq/gC for 2008 pine needles). This suggests that more radioactivity was released during the earthquake than TEPCO claimed. (For TEPCO's figures see NIT 119.) It is unclear where the carbon 14 came from, but it is conceivable that it could have leaked from damaged fuel assemblies. This is further evidence that the full effects of the earthquake are still not properly understood.

TEPCO failed to carry out measurements of environmental samples to assess radioactivity released during the earthquake. As it happened, CNIC already had a project to measure radioactivity around Rokkasho (see NIT 111), so we decided to measure carbon 14 in pine needles from KK at the same time.

Yukio Yamaguchi (CNIC Co-Director)



Major active faults in the vicinity of the Kashiwazaki-Kariwa Nuclear Power Plant

The star shows the epicenter of the 2007 Chuetsu-oki earthquake. (Underground rupture along the seismic fault plane began directly beneath this point.) Slip on the fault plane spread to almost the whole area where aftershocks occurred (ellipse). Thick lines show active faults. (Broken lines are inferred ones.) Black triangles on the lines show dip-directions of the faults. The sea area is based on Watanabe *et al**. F-A, F-B and F-C are faults after TEPCO's application for a license variation for Units 6 & 7. The Madogasaka fault is after Watanabe *et al*.. The Jorakuji fault is after Nihon no Katsudanso (New Edition) (Research Group for Active Faults of Japan (Ed.), University of Tokyo Press, 1991).

* Watanabe Mitsuhisa, Suzuki Yasuhiro, Nakata Takashi: *Programme and Abstracts*, Japan Association for Quaternary Research, No. 37, Suppl., 4(2007).

Rokkasho Reprocessing Plant

Leak of 150 Liters HLW in Vitrification Facility

Active testing of the Rokkasho Reprocessing Plant continues to be plagued by problems and accidents. Since the beginning of 2008, Japan Nuclear Fuel Ltd. (JNFL) has successively extended the schedule for commencing commercial operations from February 2008 to May to July to November and then to February 2009. In January 2009, 150 liters of high-level liquid radioactive waste (HLW) leaked from pipes in the vitrification cell, so JNFL was forced to extend the start-up date by a further six-months to August this year. However, there is no scientific or technical basis for selecting August as the starting date. It is simply a target for JNFL.

Continuing problems with production of HLW glass canisters

The Rokkasho Reprocessing Plant produced its first MOX powder product in November 2006 and testing of the final facility, the Vitrification Facility, commenced in November 2007. However, vitrification testing has been a comedy of errors, with each attempt to fix one problem giving rise to further problems. As a result, in fourteen months only 107 glass canisters have been produced. (It is supposed to produce 1,000 in 12 months.)

Accumulation of platinum group elements

During the first two months, testing of the Vitrification Facility was initially suspended because of damage to the machine that welds the lids onto the vitrified waste canisters. In the latter half of this period, platinum group elements contained within the HLW liquid, including ruthenium, accumulated at the bottom of the vitrification furnace blocking the outlet. The vitrification tests require a flow rate out of the bottom of the furnace of 70 liters of molten glass per hour. This standard was not being met, so the tests were suspended again. Nevertheless, in February 2008 JNFL submitted a report on step 4 of the active tests, which claimed there were no safety problems with the production of glass canisters. The Nuclear and Industrial Safety Agency (NISA) accepted this report and approved resumption of the tests. However, pointing to the lack of specificity in the prediction that stirring the mixture in the bottom of the furnace would prevent the problem of accumulating platinum group elements, it required a follow-up report.

By allowing JNFL to continue testing the production of glass canisters, even though the tests had not been passed and the outcome of the follow-up report was completely unclear, NISA effectively exacerbated the technical problems of the vitrification furnace. JNFL proposed stirring the mixture to deal with the problem of accumulation of platinum group elements, even though this was not considered in the original design. As an afterthought, two stirring rods (one straight and one bent) were added to the top of the furnace.

Low viscosity fluids

New measures to deal with platinum group elements were introduced and testing was recommenced on July 2, 2008. However, the tests were suspended after just 32 minutes, without producing a single glass canister. The nozzle through which the glass was supposed to flow could not be heated, so the glass would not flow through.

It is conjectured that the cause of this problem was so-called "low viscosity fluids". Substances that are less viscous than molten glass appear to have flowed down more quickly than the glass and adhered to the nozzle. These substances included radioactive substances such as molybdenum. The substances that had adhered to the nozzle were removed and the tests were finally resumed on October 10.

Failure of the stirring rods

Testing was resumed and initially it seemed like third time would be lucky. On October 20 accumulation of platinum group elements was confirmed. JNFL shifted to so-called "cleaning operation" (only glass ingredients fed into the furnace) and reported that this was effective. Undissolved sludge was fed into the furnace for the first time on October 23.

On October 30, accumulation of platinum group elements appeared again and preparations were made to insert the straight stirring rod. However, on November 1, the window through which the rod was to be inserted would not open. JNFL spent until November 17 replacing the window. When the metal rod was finally inserted, it did not work properly, so a camera was inserted to see what the

problem was. It was discovered that it was bent virtually at right angles. The rod was made of heat resistant Inconel Alloy, but it appears that it bent as a result of the heat of the furnace and the load.

In response to this problem, the rod and all the molten glass were removed from the furnace, but on December 24 it was discovered that one of the tiles (6 kg) had fallen from the ceiling of the furnace. It is very likely that it was damaged when the rod was removed.

What happened to 150 liters of leaked HLW?

On December 16, because of the problems of the bent stirring rod and the fallen tile, JNFL closed off flanges to stop the flow of HLW through two pipes connecting the HLW feed tank to the furnace. However, in January it was confirmed that 150 liters of HLW had leaked from this area.

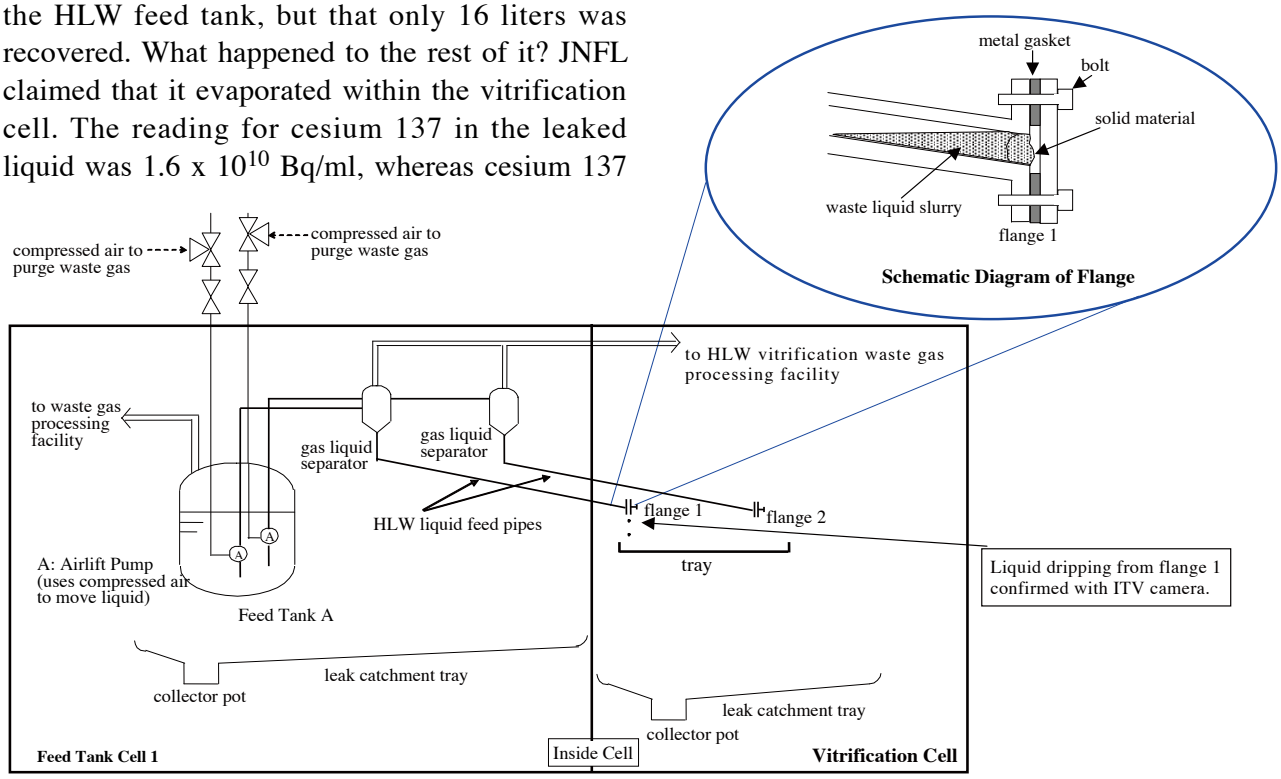
Starting from January 9, an alarm in the vitrification cell indicated a rise in the level of liquid in the tray beneath the flanges and in the catchment tray on the floor. The alarm went off then stopped again repeatedly. The operators checked with cameras, but the level of the liquid in the trays was below the level at which the alarm should go off, so they disregarded the alarms. It wasn't until January 21, when the liquid in the trays was analyzed for the first time and the radioactivity reading was found to be very high, that JNFL recognized that there must be a leak of HLW liquid.

JNFL says that about 150 liters leaked from the HLW feed tank, but that only 16 liters was recovered. What happened to the rest of it? JNFL claimed that it evaporated within the vitrification cell. The reading for cesium 137 in the leaked liquid was 1.6 x 10^{10} Bq/ml, whereas cesium 137 Feed Tank A was only 3.6 x 10^{9} Bq/ml. That means the concentration in the leaked liquid was 4.4 times that in the feed tank. This indicates that the liquid had become concentrated during the period while the leak was continuing (January 9~24). As the liquid gradually dripped from the flanges it accumulated in the tray below, then overflowed into the catchment tray at the bottom. The liquid then evaporated from the trays in the hot vitrification cell.

JNFL's explanation revealed that there was a series of errors. HLW Feed Tank A feeds waste liquid to the furnace by an "airlift" system. Although HLW liquid was not being fed to the furnace at the time of the leak, pressure was being applied to purge waste gas. JNFL suspects that for some reason the pressure rose and liquid was forced up the feed pipe. Compounding the problem, the flanges were not properly closed. (After the leak was confirmed, the flanges were tightened and the leak stopped.) Although alarms were going off and the level of the liquid in HLW Feed Tank A had fallen, JNFL failed to connect this with the possibility of a leak.

The incident is an indictment of JNFL's shoddy management of the Vitrification Facility. It is further evidence that JNFL is not capable of operating a facility as complex as the Rokkasho Reprocessing Plant.

Masako Sawai (CNIC)



Schematic Diagram of Repeated Dripping HLW Liquid

Bilateral Agreements with Russia and Kazakhstan

Negotiations for bilateral nuclear cooperation agreements between Japan and Russia and Japan and Kazakhstan have been continuing for nearly two years. The first round of negotiations with Russia was held on April 26, 2007, while the first round of negotiations with Kazakhstan was held on June 13, 2007.

Japan-Russia Agreement

There have been several reports that the Japan-Russia agreement will be signed soon. It was originally expected that Russian Prime Minister Vladimir Putin would come to Japan by the end of 2008 and that the agreement would be signed during his visit. Mr Putin has not yet visited Japan, but it is reported that when Japanese Prime Minister Taro Aso and Russian President Dmitri Medvedev met in Sakhalin in February to inaugurate a liquefied natural gas plant (part of the Sakhalin 2 project), they agreed that Mr Putin would visit Japan in May. On February 12, Kyodo News reported that both sides have already reached a full agreement in working-level talks on the text of the agreement.

There is already a nuclear cooperation agreement between Japan and Russia, which dates back to Soviet days. However, cooperation under this agreement only covers radiation and radioactive isotope related research and issues related to safety, radioactive waste disposal and the like. Several reasons have been given for signing a new agreement with Russia.

The agreement could enable involvement by Japanese companies in the construction of nuclear power plants to Russia. It could also enable cooperation on nuclear fuel cycle activities. On March 20, 2008 Atomenergoprom and Toshiba announced that they had concluded a general framework agreement that could lead to joint design and engineering of nuclear power plants, manufacture and maintenance of large nuclear plant components, and cooperation in front-end nuclear fuel cycle business (Nucleonics Week March 27, 2008). Shunsuke Kondo, Chairman of the Atomic Energy Commission of Japan, is reported to have said that Japan could use advanced Russian fast-breeder technology and that the government also wants to get involved in Russian uranium enrichment services (AP, May 15, 2007).

Japanese electric power companies have imported enriched uranium from Russia in the past, but the government takes the view that a bilateral agreement is not required in such cases, because they do not involve transfer of Japanese nuclear material or technology. However, an agreement would be necessary for a different type of enrichment service that is envisaged. Japanese utilities are interested in Russian re-enrichment of uranium recovered from spent nuclear fuel reprocessed in Europe. Bloomberg reported on February 27, 2007 that Tokyo Electric Power Company (TEPCO) and Japan Atomic Power Company (JAPCO) had expressed an interest in seeking Russian help in enriching recovered uranium stored in Europe.

Since government policy requires a bilateral nuclear cooperation agreement before Japanese owned nuclear material can be exported, re-enrichment cannot take place in Russia without such an agreement. However, besides the requirement for a nuclear cooperation agreement between Japan and Russia, re-enrichment would also be subject to bilateral agreements between Japan and other countries. Since most of the uranium used in Japanese reactors was enriched in the US, the US attitude is relevant to the Japan-Russia deal. Late last year, in response to Russian military action in Georgia, the Bush administration withdrew from congressional consideration a proposed US-Russia agreement for civilian nuclear cooperation. It remains to be seen whether the Obama administration will proceed with that agreement, or whether the status of the US-Russia agreement will affect the US attitude to the Japan-Russia agreement.

There are several grounds for concern about nuclear cooperation between Japan and Russia. In the first place, Russia is a nuclear weapons state and the civilian and military arms of its nuclear program are not clearly separated. Assurances that Japanese nuclear material and technology will not find their way into Russia's nuclear weapons program will be virtually impossible to verify. A January 18, 2009 Kyodo article makes the following comment:

> "In past negotiations, Japan and Russia have clashed over involvement by the International Atomic Energy Agency. Japan is demanding the agency conduct a "strict examination" of Russia's nuclear facilities to confirm the plant will be used for peaceful purposes. Russia showed reluctance by insisting the country is already a nuclear power."

The fact that the Japanese government is pushing for rigorous implementation of IAEA safeguards does not inspire much confidence. The IAEA's budget is over-stretched and inspections in nuclear weapons states are a low priority. No Russian facilities are listed on the IAEA's latest list of safeguarded facilities (31 December 2007). Australian NGOs, which have campaigned successfully to block Australian uranium

sales to Russia, point out that there have been no IAEA safeguards inspections in Russia since 2001.

Furthermore, Japan cannot be confident that Japanese nuclear material will not be diverted to Iran, or to other countries suspected of developing nuclear weapons. Russia traditionally uses its own resources to meet its own demand. Uranium sourced from other countries is more likely to be exported. The inadequacy of IAEA safeguards in nuclear weapons states and Russia's supply of fuel for Iran's Bushehr nuclear power plant are grounds for serious concern.

Another concern is environmental. The uranium stockpiled in Europe presents a problem for Japanese power companies. They are obliged to take it back. This creates a storage and disposal problem for them. However, if it is re-enriched in Russia, the leftover depleted uranium will remain in Russia. The disposal problem will then be Russia's. Russia is in the process of setting up the International Uranium Enrichment Center (IUEC) at the Angarsk Electrolytic Chemical Combine in East Siberia, 5,100 km from Moscow. Japan's uranium would be processed at Angarsk when it is up and running. However, Russian environmental group, Ecodefense, has expressed concern that the uranium enrichment plant in Angarsk represents a threat to nearby Lake Baikal, a UNESCO World Heritage site.

Japan wants to diversify its supplier base, but it is questionable whether relying on Russian enriched uranium is an effective way to ensure the energy security that Japan craves. In February 22, 2007 the Yomiuri Shimbun noted that in 2006 "Russia temporarily halted the natural gas supply to Ukraine, and has acted to deprive Mitsui and Mitsubishi Corp. of their rights in the Sakhalin-2 project, as well as using its position as a resource-rich country to pressure its customers. There is fear Russia may halt its supply of natural or enrichment of uranium depending on its relationship with Japan." A repeat of the Russia-Ukraine gas dispute in January this year, which led to a severe reduction of gas supplies to Europe, was eloquent testimony to Russia's willingness to use energy supplies as a diplomatic lever.

Japan-Kazakhstan Agreement

The current status of the nuclear cooperation agreement between Japan and Kazakhstan is unclear, but a 28 August 2006 Memorandum of Understanding (MoU) gives some clues about the types of cooperation envisaged. In addition to the development of uranium mines, the MoU refers to establishing the legal basis for provision of uranium products processed to a higher level, including the fabrication of nuclear fuel for the Japanese market. It also refers to information exchange and human resources cooperation towards the introduction of light water reactors to Kazakhstan.

Toshiba Corp. is said to have agreed with Kazatomprom to help build nuclear power plants (Japan Times, May 1, 2007). A bilateral agreement would certainly be necessary for this. The supply of nuclear fuel would not in itself require a bilateral agreement, but if the fuel were made from Japanese-owned uranium sent from Europe and re-enriched in Russia, then a bilateral agreement would be necessary. The fact that Kazakhstan is a partner in the IUEC project at Angarsk makes this highly likely. Sergey Yashin, Vice President of Kazatomprom (KAP) is reported to have said that under a memorandum of understanding with Kansai Electric Power Company (KEPCO), Nuclear Fuel Industries (NFI), and Sumitomo Corp., KAP plans to supply powder and pellets made with KEPCO's reprocessed uranium (NuclearFuel, July 28, 2008).

Final Remarks

Securing access to resources is a major priority for Japanese government and industry. Russia and Kazakhstan claim one-fourth of the world's total uranium reserves and several Japanese companies already have interests in uranium mining and exploration in these countries. Now the Japanese nuclear industry is looking to expand its involvement in Russia and Kazakhstan beyond uranium resources. In part this is driven by a lack of demand in the Japanese market and in part it is preparation for anticipated international nuclear industry developments. Toshiba, which now owns Westinghouse, wants to secure its supply chain, including fuel for the reactors it hopes to construct. Kazakhstan's nuclear power company Kazatomprom, which has a minority stake in Westinghouse, will no doubt be happy to play a junior role. Cooperation with Russia is likely to be more challenging.

Philip White (NIT Editor)

Stop Press: On March 19, Atomenergoprom (AEP) announced that it had agreed with Toshiba Corp to "carry out joint activities on the market of nuclear fuel cycle products and services in Japan and other countries in Asia". They are "working on the issue of establishing guarantee stockpiles of low-enriched uranium at the sites of nuclear fuel fabrication" and have agreed to "launch detailed studies of potential joint construction on the territory of Japan or other country of uranium enrichment plant based on the Russian technology". They also agreed to "commence the joint study on improvement of Russian Nuclear Power Plant design process and construction technology" and "continue the study for establishing the partnership on manufacturing for power generation systems".

Shika-2: Unjust Verdict!

On March 18 the Kanazawa Branch of the Nagoya High Court handed down its verdict on an appeal concerning the Shika-2 Nuclear Power Plant (ABWR, 1,358 MW). The appeal related to a civil suit calling for the termination of construction and operation of the Shika-2 plant. On March 24, 2006 the Kanazawa District Court had accepted the plaintiffs' claim that the seismic safety of the plant was inadequate and ordered that operations be suspended. However, the High Court overturned this ruling.

Seismic safety was the main point of contention in Hokuriku Electric Power Company's appeal, but the plaintiffs also raised issues that have emerged since the lower court verdict, including concealment of a criticality incident at the Shika-1 plant and turbine damage in the Shika-2 plant. The High Court rejected the plaintiffs' case and, judging from the preliminary statement, appears to have accepted Hokuriku's claims in their entirety.

Three issues related to seismic safety in which the verdict can clearly be said to be unjust are outlined below.

1. Predicted magnitude insufficient

Hokuriku Electric claimed that it was sufficient that the plant be able to withstand a M6.8 earthquake. The court accepted this claim. It dismissed the plaintiffs' argument that the Southern Hyogo Prefecture Earthquake (1995) and the Western Tottori Prefecture Earthquake (2000) suggest that a M7.3 earthquake could occur anywhere in Japan, even if no earthquake fault has been discovered. The verdict is based on ignorance of the facts. For example, it incorrectly claims that the Western Tottori Prefecture Earthquake was caused by a known fault.

During the revision of the Seismic Guidelines (September 2006) it was proposed that earthquakes in the M7.0 to M7.3 range should be considered. Back checks were mandated under the new guidelines, but the power companies are all proposing that earthquakes in the order of M6.9 are sufficient. Clearly the under-estimation problem applies to all the utilities.

The seismic safety leeway of the equipment in Shika-2 is very low. Even though earthquake magnitude is under-estimated, important safety-related equipment barely meets required safety standards. This can be said of equipment including control rods, pipes in the residual heat removal system, main steam pipes and the containment vessel. These are all items that are supposed to easily meet the standards, given the assumptions used in the calculations. This goes to show how dangerous the Shika-2 plant is. If public safety was the top priority, seismic safety should be assessed on the basis of a much stronger earthquake.

2. Assessment of Ohchigata Fault Zone ignores Headquarters of Earthquake Research Promotion principles

Hokuriku Electric lost the case in the District Court over this issue. In the context of earthquake back checks required under the new guidelines, it increased its assessment of the length of the Ohchigata Fault Zone to 34km. However, this assessment was based on an assessment that the nearby Tsuboyama-Hachiya Fault is a separate fault. The High Court accepted this assessment on the grounds that the shear of the two faults is in the opposite direction.

If the Headquarters of Earthquake Research Promotion's "5km rule"[1] were applied, addition of the Tsuboyama-Hachiha Fault would increase the length of the Ohchigata Fault Zone by 10km, and the seismic safety assessment would have to be based on a 44km fault. In fact, the Headquarters of Earthquake Research Promotion predicts a M7.6 earthquake.

3. Verdict ignores the lessons of the Chuetsu-Oki Earthquake

The verdict cites the government's safety assessment to justify its acceptance of Hokuriku Electric's seismic safety claim. However the Chuetsu-Oki Earthquake, which struck the Kashiwazaki-Kariwa Nuclear Power Plant (KK), proved that the government's safety assessment cannot be relied on.

Hokuriku Electric claims that it has responded to the Chuetsu-Oki Earthquake by taking measures to prevent water from the spent fuel pools from overflowing. It also claims that since only a tiny amount of radioactivity escaped during the Chuetsu-Oki Earthquake, it cannot be said that that earthquake indicates that the Shika-2 reactor is unsafe.

Based on the experience of the Chuetsu-Oki Earthquake, the Nuclear and Industrial Safety Agency (NISA) instructed power companies to consider 1.5 times more violent shaking (still insufficient), but the verdict makes no mention of this point. In relation to the magnitude of

Continued on page 14

Group Introduction

Hangempatsu Shimbun and the National Network Against Nuclear Energy

by Baku Nishio*

The National Network Against Nuclear Energy was formed in March 1978, bringing together networks throughout Japan opposed to nuclear energy. A newspaper entitled *Hangempatsu Shimbun* (Anti-Nuclear Power Newspaper) has been published each month since May of that year. For over thirty years the newspaper has acted as a medium of exchange connecting the various campaigns.

Publishing this newspaper is the most important task of the National Network Against Nuclear Energy. It is this newspaper which is the glue binding the whole movement together.

Local Issues are reported in regional newspapers, but although these reports would be useful for people in other regions, the reality is that most local actions are not reported in the other regions' newspapers. It was therefore suggested that articles be collected from the various regional newspapers and published in a newsletter to enable people around the country to share important information. This suggestion was made at the first National Gathering Against Nuclear Energy held in August 1975.

The idea was developed and a little over two years later the first issue of *Hangempatsu Shimbun* was published. Only it did not depend on articles published in other newspapers. Instead, people in each region wrote their own articles. As a basis for discussion, in March 1978 a trial Issue No. 0 was produced by people from all around Japan and the first official issue was published in May.

Hangempatsu Shimbun is a 4 x B4 page newspaper. Besides reports about hot issues from around Japan and overseas, it also contains a monthly summary of major developments, analysis of key issues, energy information and data boxes.

Thanks to the expansion of the internet, we receive instantaneous information from around the world. Compared to this, the information in a monthly newspaper comes very late. Perhaps it is more of an "Oldspaper" than a "Newspaper". But this also allows us to avoid confusion. There is value in communicating only truly useful information.


反原発新聞
はんげんぱつ新聞
10・3 NO NUKES FESTA 2009
10月3日は東京・明治公園へ
実現しよう！原発に頼らない暮らしを
藤井宏子
山口幸子
DATA

This monthly newspaper is not the work of a single dedicated staff member. The reason why it is published on time each month is because the readers are not passive receivers of information. The load is spread between a dozen or so editors around the country. These local editors are involved in the production of each issue. It is possible to keep publishing reliable information because many people in each region see it as their own newspaper.

The National Network Against Nuclear Energy has another major role. It comes up with ideas for the National Gathering Against Nuclear Energy. Since the first National Gathering Against Nuclear Energy in 1975, there have been national gatherings in 1983, 1988 and 2003 and the gathering planned for October 2~3 this year, entitled "10.3 NO NUKES FESTA 2009", will be the fifth. The first two gatherings were held in Kyoto and since then it has been held in Tokyo. Each time a steering committee was established to host the event, while ideas were developed during regular meetings of the National Network Against Nuclear Energy. (Regional editors meet 2 to 3 times during the year to discuss contents of the newspaper and management of the network.)

Besides generating ideas for the National Gathering Against Nuclear Energy, the network has often been used as a medium to call for protest action. For example, when the Three Mile Island accident occurred one year after the network was formed, the network *Continued on page 14*

** Baku Nishio is editor of the Hangempatsu Shimbun and Co-Director of Citizens' Nuclear Information Center*

NEWS WATCH

Otsuki Town rejects radioactive waste dump

Search for a site to dispose of radioactive waste categorized as "waste from research facilities etc." has begun in earnest. In May 2008 a law was enacted establishing the Japan Atomic Energy Agency (JAEA) as the responsible organization, then in December the Ministry for Education, Culture, Sports, Science and Technology (MEXT) and the Ministry for Economy, Trade and Industry (METI) established the basic policy.

The Nuclear Waste Management Organization of Japan (NUMO) is the organization responsible for geological disposal of high-level radioactive waste and trans-uranium waste (TRU), while Japan Nuclear Fuel Ltd. (JNFL) is the organization responsible for disposal of low-level radioactive waste generated at nuclear power plants. The responsible organization for other radioactive waste had not been decided, but last year's decision established JAEA as the responsible organization for the disposal of radioactive waste generated at research agencies (JAEA being the main one), universities and nuclear energy-related civil facilities, and radioactive waste generated in association with the use of radioisotopes (RI). All these types of radioactive waste were bundled together under the classification of "waste from research facilities etc".

On December 1, 2008, six residents of Otsuki Town in Kochi Prefecture submitted a petition to the local council asking it to accept a study into the siting of a dump for this waste. Consideration of the petition began on January 23, 2009 and the council unanimously rejected it on February 4.

Close-down of Tsuruga-1 to be delayed

The Tsuruga-1 Nuclear Power Plant (BWR, 357 MW) was scheduled to be closed down in 2010, after 40 years of operation. However, on February 17, Japan Atomic Power Company (JAPCO) applied to the Minister of Economy Trade and Industry for permission to continue operating the reactor beyond that date. JAPCO also communicated to Tsuruga City and Fukui Prefecture its intention to extend the operation of the Tsuruga-1 plant. If the extension is approved, Tsuruga-1 will be the first plant in Japan to operate longer than 40 years.

The original plan was for Tsuruga-3 (APWR, 1,538 MW) to begin operation in 2008 and Tsuruga-4 (APWR, 1,538 MW) to begin in 2009. However, demand for the power companies which the Tsuruga plant supplies*, Kansai Electric, Hokuriku Electric and Chubu Electric, has plateaued. Also, JAPCO has had to respond to the requirements of the new earthquake guidelines (NIT 112). For reasons such as these, plans to construct units 3 and 4 have been postponed year after year and they are now not scheduled to begin operation until 2016 and 2017 respectively. One of the reasons JAPCO gave for extending the life of Unit 1 was consideration for the local economy.

Because Hamaoka-1&2 (BWR, 540 MW and 840 MW) ceased operation after 32 years and 30 years respectively (see NIT 128), it became necessary to show that this was not due to aging. Some people believe that this was the reason for declaring that closure of Tsuruga-1 would be postponed.

* JAPCO is a wholesaler of electric power.

Toshiba secures first EPC agreement in US

On February 25, Toshiba announced that it had secured an engineering, procurement and construction (EPC) agreement for South Texas Project (STP) Reactors 3 and 4 (ABWR, 1,350 MW each). The agreement is between Toshiba America Nuclear Energy Corp. and STP Nuclear Operating Co., which operates STP-1&2. Construction is scheduled to commence in 2012 and 2013 and commercial operations are scheduled to commence in 2016 and 2017 respectively. The total contract is worth approximately $8 billion. This is the first EPC agreement not just for Toshiba, but for any Japanese company. It is said that Toshiba's subsidiary Westinghouse will also participate in engineering and supply of parts.

57.8% Capacity Factor in 2008

The capacity factor for Japan's 55 nuclear reactors (total 49,580 MW) fell to just 57.8% in 2008. Of the 55, ten produced no power in 2008. All seven Kashiwazaki-Kariwa reactors have been shut down since the July 16, 2007 Chuetsu-Oki Earthquake. Hamaoka-1 has been shut down since an accident in November 2001 and it also has had equipment problems, while Hamaoka-2 has been shut down since April 2004. Both these reactors were officially permanently shut down on January 30, 2009 (see NIT 128). Shika-2 has not operated since the discovery in March 2007 of the cover up of a criticality incident. Two reactors operated at a capacity factor of between 10% and 20%, one between 20% and 30% and two others between 40% and 50%, giving a total of 15 reactors with a capacity factor of less than 50% in 2008.

Restart of Monju delayed again

For a year now false alarms indicating sodium leaks have been going off all over the place in the Monju reactor (FBR, 280 MW) (see NIT 126). There are 3,000 detectors that are identical or similar to the detectors that have given these false alarms. In August 2008 Japan Atomic Energy Agency (JAEA) announced that the restart date would be set back from October 2008 to February 2009 in order to allow time to check all these detectors and carry out safety checks.

False alarms were still occurring in October 2008 when renewed attention was given to corrosion in the exhaust duct. The corrosion problem itself was not new, but it emerged that corrosion identified during previous inspections had not been attended to.

By rights, the corroded exhaust duct should be replaced, but because JAEA is in a rush to restart Monju it decided to wait until after the reactor is restarted before replacing the duct. JAEA decided to make do for the time being by welding over the corroded spots. Even so, the work will take time, so JAEA decided to further delay the restart date. At this stage, a new restart date has not been announced, but the repairs are expected to take until May at least.

Continued from page 11 the Chuetsu-Oki Earthquake, the shaking of KK was huge. In accepting Hokuriku Electric's assessment of the magnitude of the earthquake, the shaking of the plant that would result and the seismic spectrograph, the verdict ignores the lessons of the Chuetsu-Oki Earthquake.

The overall verdict is based on the High Court's acceptance of NISA's assessment that the Shika-2 plant is safe. However, given NISA's failure to predict the impact on KK of the Chuetsu-Oki Earthquake, it is clear that NISA's safety assessment is not a sound basis for judgment. It is also important to remember that Shika-2 was designed and constructed under the old seismic guidelines and that the back checks required under the new guidelines are only a supplementary measure.

Seismic safety assessment of nuclear power plants should demonstrate that the plants are able to withstand earthquakes that could potentially occur in future. This verdict completely fails to address this issue. Instead of inspiring confidence in the safety of the Shika-2 plant, the verdict rather makes us even more worried.

Hideyuki Ban (CNIC Co-Director) and Chihiro Kamisawa (CNIC nuclear safety specialist)

1. The "5km rule" presumes that two active faults within 5km of each other should be treated as a single fault.

Continued from page 12 called on people to converge on the Ministry of International Trade and Industry (MITI, now METI, the Ministry of Economy, Trade and Industry) for an all night protest demanding that Japan's nuclear power plants be shut down. Also, a National Exchange Meeting is held every few years. In May 2008 the network hosted a party to celebrate the 30th anniversary of its formation and of the publication of the first edition of *Hangempatsu Shimbun*. The theme of the party was "Earthquake Islands Don't Need Nuclear Power: National Exchange Meeting".

Nuke Info Tokyo is a bi-monthly newsletter that aims to provide foreign friends with up-to-date information on the Japanese nuclear industry as well as on the movements against it. This is the last printed edition of NIT. However, we will continue to publish it on CNIC's web site in pdf and html forms.
Editor: Philip White