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Shika-2 Verdict Demands Suspension of Operations

Reactor Cannot Withstand an Earthquake

The ritual victory banner photo

On March 24th the Kanazawa District Court handed down a verdict demanding that operation of Hokuriku Electric Power Company's Shika-2 reactor (1,358 MW ABWR) be suspended. There are currently 55 commercial reactors operating in Japan, but this is the first time that citizens have won a court case against one of these reactors on the grounds that it is unsafe to operate. As such it was a ground-breaking victory.

History of the case

Construction of Shika-2 began on 27 August 1999 and four days later, on August 31st, 135 plaintiffs from 17 prefectures lodged a case, demanding as follows:

> "If this reactor were to be operated, during regular operations, or under extraordinary conditions, exposure to the radiation and radioactive material released into the environment would cause me grievous harm. It would do irreparable damage to my life and person." For this reason, "based on my rights as an individual and my environmental right, in order to prevent this harm, I demand that operations be suspended."

There is a history behind this case. In 1988, 100 plaintiffs lodged a case against the Shika-1 reactor (540 MW BWR). Their case was rejected by the District Court in 1994. They appealed and the High Court rejected their demands in 1998. However, although they lost their case, they extracted an acknowledgement that nuclear power plants are a negative legacy for future generations. They appealed to the Supreme Court, but their case was rejected in 2000. The Shika-2 victory therefore came 18 years after they first lodged a case against the Shika nuclear power plant.

Major features of the verdict

Reading the verdict one notices that it has several features.

First, the plaintiffs' claims about issues such as the following were all rejected: the problems of stress corrosion cracking and pipe thinning, the intrinsic dangers of ABWRs, the hollowness of the

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system for preventing the emergence and escalation of problems in nuclear reactors, the defects of the system for preventing the release of radioactive materials, and the dangers associated with the use of MOX fuel. However, it should be noted that the court showed considerable sympathy for the plaintiffs' claims. For example, it held that in the case where a pipe burst due to thinning, it could not be said that there was a possibility that this alone would result in radiation exposure in excess of the permitted limit. However, it acknowledged that it would be a different matter if a thin section of pipe burst as a result of an earthquake, and multiple other failures occurred at the same time.

Second, with reference to the Three Mile Island (1979) and Chernobyl (1986) accidents, the court rejected any presumption that such accidents could happen at the Shika-2 reactor. It held that it was not possible to claim that there is a specific possibility that an accident could occur which would cause the plaintiffs to be exposed to radiation in excess of the permitted limit.

However, the third feature of this verdict was its decisive departure from verdicts by other courts in regard to earthquakes. It took into account progress in seismology since the Southern Hyogo Earthquake of 1995. Thus, the third feature took precedence over the other two features and the plaintiffs' case succeeded.

Earthquake design deficiencies

There are three main areas where the court found the reactor's earthquake design to be deficient.

(1) It found the current magnitude 6.5 earthquake standard for earthquakes focused directly beneath the reactor to be inadequate. A magnitude 7.3 earthquake occurred in the west of Tottori Prefecture in October 2000 in an area where no active fault had been discovered. Based on current seismic knowledge, it should be assumed that an earthquake of magnitude 7.2 - 7.3 could occur directly beneath the reactor, even if no fault has been discovered in the area.

(2) In March 2005 the government's Headquarters for Earthquake Research Promotion announced that a 7.6 magnitude earthquake could occur if the whole Ochigata Fault Zone were to move at once. Hokuriku Electric did not take this possibility into account. The Ochigata fault is near the Shika reactor. It had previously been thought of as several smaller faults, but the Headquarters for Earthquake Research Promotion recognized the possibility that all these faults could move together as a single fault zone.

(3) The largest predicted earthquake has until now been estimated using the Osaki Method. However, the Osaki method is not appropriate, because the results obtained using this method do not match the results obtained from empirical observation. The court referred to the Southern Hyogo Earthquake and the earthquake off the coast of Miyagi Prefecture in August 2005 as examples of earthquakes where the movement greatly exceeded the movement predicted by the Osaki Method. Therefore, it cannot be said that the safety has been assured of reactors designed to withstand earthquakes predicted using this method.

Specific danger to all plaintiffs

CNIC's Masako Sawai gave evidence at the 27th oral hearing held on 18 March 2005. As part of her evidence she presented the results of CNIC's calculations of the impact of an accident involving a core melt down at the Shika-2 reactor followed by a steam explosion and a breach of containment. The results, based on the WASH 1400 probabilistic risk assessment, showed that the annual radiation exposure for people within a 728 km radius would exceed the limit for a single year for radiation workers of 50 mSv (limit over 5 years of 100mSv). Since the permitted dose for members of the general public is 1 mSv/year, if the worst possible accident were to occur as a result of an earthquake, there is a danger that this dose would be greatly exceeded for even the most distant plaintiff, who lives in Kumamoto Prefecture. The court accepted CNIC's evidence and conlcuded that there is a specific danger for all the plaintiffs.

Other court cases

Among the verdicts for court cases involving nuclear power plants during the 1990s, there were a few which expressed some understanding of the plaintiffs' claims. The Shika-1 verdict (September 1998) recognized that nuclear power plants are a negative legacy for future generations. The Tomari NPP verdict (February 1999) acknowledged that the suspension of nuclear power plants is an option. The Onagawa NPP verdict (March 1999) recognized that an even greater degree of safety is desirable. Then in January 2003 there was the verdict by the Nagoya High Court (subsequently

overturned by the Supreme Court), which found that the license for the Monju fast breeder reactor was invalid. The Shika-2 verdict seems to have taken these previous verdicts into account.

Shika-2 still operating

Hokuriku Electric has appealed, so the case will now go to the High Court. As long as there are still avenues for appeal it is possible to continue operating the reactor. However, there is no doubt that the spirit of the "precautionary principle", which this verdict upholds, will become more and more important.

Review of Earthquake Design Guidelines

The ground beneath the government's earthquake safety design guidelines was shaken by this verdict. This is because the first and third design deficiencies identified above apply to all nuclear power plants in Japan. It seemed that the Nuclear Safety Commission's Subcommittee on Earthquake Resisting Design was in a rush to respond when, on April 28th, it released the results of a five-year review of the guidelines (see also News Watch section on page 12). However, it is quite unclear whether the new draft guidelines represent an improvement on the existing guidelines. There was significant division within the Subcommittee, with some members feeling that a much stronger draft should have been produced. One got the impression that Emeritus Professor Heki Shibata (Tokyo University) was expressing his dissatisfaction when he submitted a list of critical comments and absented himself from the session at which the draft guidelines were delivered. Professor Shibata's dissent was very telling, since he was a member of the committee which produced the existing guidelines.

The draft guidelines are very vague in several key areas. For example, whereas the existing guidelines require that designs take into account a magnitude 6.5 earthquake focused directly beneath the reactor, this figure is deleted in the new draft guidelines. It is left up to the power companies to judge the size of the earthquake to be considered. No doubt in some cases a larger earthquake will be considered, but the draft guidelines give no indication that this will always be the case.

Another vague aspect relates to the indicator for “Basic Earthquake Ground Motion”. In the existing guidelines there are two indicators, “maximum design earthquake” (S1) and “extreme design earthquake” (S2). The most important equipment for safety purposes, such as the reactor and the spent fuel pool, must be able to retain their safety functions under an “S2” Basic Earthquake Ground Motion. In the draft guidelines these indicators have been replaced by a single indicator, “Ss”. No numerical value for “Ss” is specified and it is quite unclear whether the value arrived at will be higher, the same as, or perhaps even lower than “S2” in some cases.

Under the existing guidelines faults which have been active within the last 50,000 years must be taken into account. The draft guidelines extend this period to around 130,000 years. However, they do not address the possibility acknowledged in the Shika-2 verdict that several smaller faults could move together as one. In this regard, they are already behind the times.

Perhaps it could be said that the draft guidelines are honest in acknowledging that a "residual risk" remains that a larger than predicted earthquake might strike and cause serious exposure to radiation. However, no probabilistic method of assessing this risk has been determined. Until such a method is developed, it seems that if a huge earthquake strikes, that is just too bad.

There are other questionable features of the draft guidelines: for example, the elimination of the requirements that nuclear power plants must be built on bedrock and that they must be rigid. It is claimed that technological advances make these requirements unnecessary. While technological progress has certainly been made, these changes reduce the margin of error.

The draft will now go out for public comment. Many people are deeply disappointed that, after such a long review process and despite the serious questions raised by the Shika-2 verdict, the Subcommittee could not produce something better. CNIC will certainly submit a strong response.

Yukio Yamaguchi (CNIC Co-Director)

Haiku for the season

mosses in the shade
as green as the deep sea
early summer rains

by Yoko Kawasaki

FBR Report
a feasibility study for institutional preservation

In March the Japan Atomic Energy Agency (JAEA, formerly JNC (Japan Nuclear Cycle Development Institute)) released the final report of its "Feasibility Study on Commercialized Fast Breeder Reactor Cycle System", Phase II (hereafter referred to as Feasibility Study). We have not previously reported on the Feasibility Study in NIT, so this article gives some background.

In 1997 a committee was established within the Atomic Energy Commission (AEC) to consider how the fast breeder reactor (FBR) should be developed. This committee was established in response to the December 1995 accident at the Monju prototype FBR, which involved a sodium leak and fire. In December 1997 AEC released its decision regarding the future of the fast breeder reactor, determining that it would proceed with development. This decision established FBR's status as "a strong energy option for the future". It proposed that the understanding of the local region should be obtained and that research and development should proceed in a flexible fashion. It also added the following considerations: "internal and external circumstances such as the need to assure a long-term energy source, the importance of safety assurance and of local understanding, tight financial conditions, and placing importance on striving for economic viability". Future nuclear research and development was said to be "important from the point of view of natural resources and the environment". Following AEC's decision, JNC obtained approval from the responsible government departments to carry out jointly with the power companies a feasibility study leading up to the commercialization of FBR. It signed a cooperative agreement with Japan Atomic Power Company and Central Research Institute of Electric Power Industry, established an organization to advance research and the Feasibility Study commenced in July 1999. The objective was "to present in around 2015 an appropriate picture of commercialization of the FBR cycle and the research and development program leading up to the commercialization."

A total of 5 billion yen was poured into Phase I and a report was released in March 2001. The title of the report translates roughly as "Promising Candidate Concepts for Commercialization". Forty concepts were selected for consideration. Candidate coolants were sodium, carbon dioxide, helium, metal (lead-bismuth), water, and molten salts. Candidate fuels were oxides, nitrates, metals, and molten chloride salts. Of these, the following combinations were selected as concepts for consideration in Phase II: sodium coolant with oxide or metallic fuel, gas coolant with oxide or nitrate fuel, lead-bismuth coolant with nitrate or metallic fuel, and water coolant with oxide fuel. Before proceeding to Phase II, the Phase I report was evaluated by a committee established within JNC. JNC selected the members of the committee, but the people selected were from outside JNC.

Sodium cooled reactor selected

Phase II proposed development objectives under 5 headings: safety, economic viability, reduction of environmental burden, effective use of resources, and resistance to proliferation. It considered the above concepts in order to identify a main concept, which would be the major focus of development, and a supplementary concept, which would be developed in order to give flexibility. An interim report was released in August 2004 and the Phase II final report was released this March.

Phase II, which cost 17.2 billion yen, selected the combination of sodium coolant + advanced aqueous reprocessing + oxide fuel produced by a simplified pellet method. Reasons given for choosing this as the main concept included the following: the breeding rate is comparatively high (1.10 assumed), it is the concept for which there is most technical experience, and costs can be reduced by operating large scale plants. The nuclear reactor system would be a "twin plant" with 2 x 1,500 MW reactors. An interim heat exchanger with pump is being considered for the primary system. The advanced aqueous reprocessing method is based on the existing PUREX method, which uses nitric acid, but would eliminate the refining process for the uranium product and the plutonium product. Also, after the spent fuel is dissolved in nitric acid, around 70% of the uranium would be crystallized out. As a result the quantity to be processed later would be reduced. Minor actinides (MA) would

be collected and mixed with MOX. Using this method, the quantity of fission products (in the form of MA and other impurities) in the MOX fuel would increase, but in an environment of fast neutrons this would not have much impact. In the simplified pellet method, instead of mixing uranium oxide powder and plutonium oxide powder, uranyl nitrate and plutonium nitrate would be mixed in the desired ratios and then turned into powder form. The fuel fabrication facility would be located alongside the reprocessing plant.

Two patterns were proposed for the supplementary concept. The first pattern uses sodium coolant + pyroprocessing. It uses metal fuel produced by ejection molding. Pyroprocessing is a form of dry reprocessing. The spent fuel is dissolved in a molten salt. First uranium, then plutonium and other elements are removed by electrolysis. Alternatively, the uranium and plutonium can be removed together. In the ejection molding method, pressure difference is used to make molten MOX + MA flow into a cast, which is kept at reduced pressure. This method is said to be suited to high volume production of fuel.

The second pattern uses helium coolant + advanced aqueous reprocessing. Coated particles of nitrate fuel would be used. By making uranium and plutonium into a nitrate compound the fuel's melting point can be raised. The idea is that the helium coolant would be used at over 850ºC. Nitrate fuel of diameter 1mm or less would be coated with multiple layers to form fuel particles. Titanium nitrate is one of the materials being considered as a coating material. The high temperature test reactor (HTTR), which commenced operations in March 2000, uses helium gas coolant and coated particle fuel.

It all sounds wonderful, but many technical questions, related to both the main and the supplementary concepts, are left for future technical development. For example, operating large scale plants, uranium crystallization and MA recovery during reprocessing, etc., etc. The schedule from now is in around 2015 to decide on an innovative technology and to present a picture of the commercialization of the FBR cycle and of the research and development program leading up to commercialization.

The Framework for Nuclear Energy Policy (approved by AEC in October 2005) says, "The Government will promptly evaluate the results of Phase II in view of starting on an appropriate picture of commercialization of FBR cycle" from around 2015. There is no allowance for citizens' involvement in the evaluation process. Only technologists and nuclear energy experts will be involved in considering future directions.

Ten years after the Monju accident, the result of the Feasibility Study is that once again the sodium cooled reactor has been chosen as the preferred candidate. One gets the impression that the FBR program has returned to where it started. One also suspects that from the beginning the people involved in the Feasibility Study had a fair idea of what the conclusion would be. In the end, the Feasibility Study was none other than a Feasibility Study for the institutional preservation of the FBR division of JNC (now JAEA).

Finally, it is worth noting that the Feasibility Study proposes equipment included in the major modifications planned for the Monju prototype FBR: for example, the interim heat exchanger with pump and the advanced steam generator (2 x 330 MWt). Perhaps this is because there is no indication of what organization will take the lead in the construction of a demonstration reactor. In the absence of any clear plan for a demonstration reactor, the Feasibility Study perpetuates the fixation with Monju, even though there are no prospects of commercializing this design.

Hideyuki Ban (CNIC Co-Director)

In Brief

On May 9th the Sendai High Court affirmed a lower court ruling rejecting an administrative law case against the **Rokkasho uranium enrichment plant.** The plaintiffs claimed that the government's approval was invalid and demanded that the license be annulled. However the court found no mistakes in the government's safety review. The plaintiffs have appealed to the Supreme Court.

On May 17th a leak of 7 liters of uranous nitric solution was discovered in the Purification Building of the **Rokkasho reprocessing plant**. The concentration of uranium was 21 gm/l. The leak was discovered by a worker from a subcontractor company. The worker noticed a strange smell coming from the next room. The leak was stopped 8 hours later by halting the plutonium refining process.

Rokkasho Active Tests: Baku's View

On March 31st "active tests", using spent nuclear fuel, began at Japan Nuclear Fuel Ltd's (JNFL) Rokkasho reprocessing plant in Aomori Prefecture. On this day the spent fuel was only carried from the storage pool. Shearing of the fuel didn't begin until the following day. However, according to newspaper reports, by simply commencing active tests before the end of the 2005 fiscal year, JNFL will receive payment of more than 10 billion yen. (March 31st is the last day of the Japanese fiscal year.)

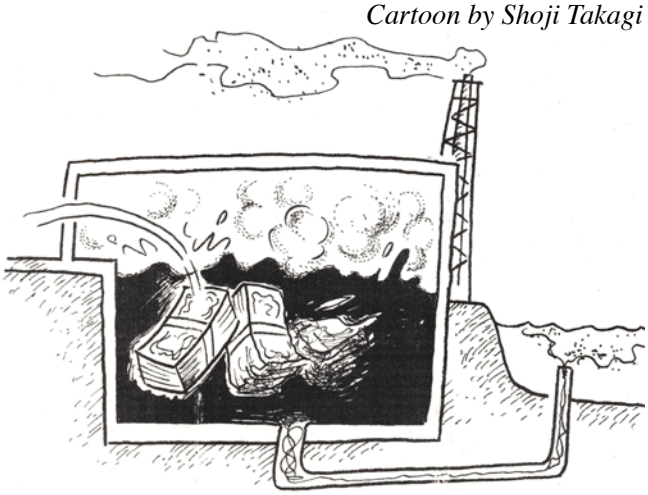
A safety agreement between JNFL, Aomori Prefecture and Rokkasho Village was required before the tests could begin. A draft agreement was presented to the prefectural assembly on February 16th, the agreement was signed on March 29th, and the tests began on the 31st, the same day that a safety agreement was signed with other surrounding towns and villages. It all happened in a great rush compared to the uranium tests, which started at the end of 2004. The draft safety agreement for those tests was submitted on 23 June 2004, but the tests didn't start until December 21st. On that occasion the whole process took four times as long.

So who was in such a hurry? Tsunehisa Katsumata, President of Tokyo Electric Power Company, has said that if they don't reprocess the spent fuel they will run out of storage space and will have to stop producing electricity. That contradicts the official reason for reprocessing, "to recycle the spent fuel". It seems to reflect the true feelings of the power companies, but the situation isn't really as desperate as all that. Rather, Katsumata's comment seems to be an excuse to account for the appearance of haste.

A local Aomori newspaper quoted an unidentified person from within a nuclear power company as saying that he believes there was strong pressure from the government and from elements within the Liberal Democratic Party, the major partner in the ruling coalition. This statement reveals the lack of enthusiasm and indeed the irresponsibility of the power companies, which by rights should be the ones taking the lead in the project. After all, 75% of JNFL's capital comes from the power companies. Effectively it is a joint subsidiary of the power companies.

The power companies are not really in a hurry to proceed with reprocessing. In fact, before the uranium tests commenced there were moves within the power companies, JNFL and the Ministry for Economy, Trade and Industry to prevent the tests from proceeding. They were afraid of accidents and they didn't want the trouble of cleaning up the radioactive mess the plant would create. Once plutonium is separated they will have to use it even if they don't want to. If they don't use it, international criticism will become stronger. As the uranium tests approached, influential people in Aomori Prefecture and national politicians were lobbied, while famous people were used in an attempt to shape public opinion against operating the plant.

Cartoon by Shoji Takagi



But in Japan pre-existing facts carry great weight. No one is willing to come forward to take responsibility for canceling programs. Unfortunately, having failed to prevent the uranium tests from starting, those responsible advance the program according to plan and obstinately assert that there are no problems with the policy. The most realistic approach for them now that the plant has commenced operations is to eye the plutonium supply-demand balance, hold down output and stubbornly defend their position.

Having said that, if an excuse could be found, they are well aware that it is still possible to reverse course. And if they won't take responsibility, it is up to us to drive them into a corner so that they have no choice but to reverse course.

Active tests have started, but it is still possible to stop the Rokkasho reprocessing plant. Indeed it is essential that we stop it.

Baku Nishio (CNIC Co-Director)

Rokkasho Active Tests: First Leak

The first publicly disclosed leak during the active tests at Rokkasho reprocessing plant occurred at 3:40 am on 11 April 2006. Forty liters of radioactive fluid leaked from the hull rinser vessel, which is in the dissolver cell within the Head End Building. (Hulls are the undissolved remains of spent fuel cladding after the spent fuel has been dissolved in nitric acid. They are rinsed to remove residual radioactive materials.)

The leak occurred when a worker was using a remotely controlled manipulator to connect a steam jet hose to the hull rinser vessel, in order to flush the fluid to the next process (see diagram). The hose should have been connected to the stopper plug at the top of the connector device, but instead of releasing this plug, the worker released the connector device itself. The plug was above the water level, so if this had been released no fluid would have leaked out. However, the leak occurred because the connector device was attached below the water level.

According to JNFL, the leaked fluid was contained within the cell, recovered and reused and there was no radiation exposure to workers. Although it was not released into the environment, it is nevertheless worth considering how much radioactivity was contained in the leaked fluid.

The concentrations and total quantities of radioactivity and of uranium and plutonium in the leaked fluid were as follows:

Total alpha emitters: 40 liters @ 4.1 x 10^5 Bq/ml = 1.6 x 10^{10} Bq

Total gamma emitters: 40 liters @ 3.1 x 10^6 Bq/ml = 1.2 x 10^{11} Bq

Uranium: 40 liters @ 6.5 gram/liter = 260 grams

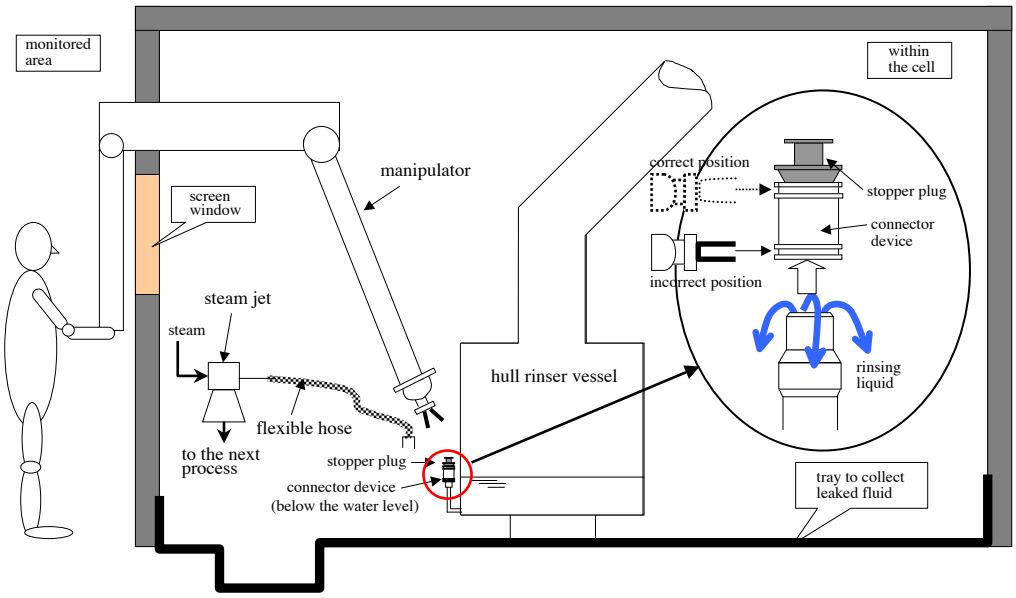
Plutonium: 40 liters @ 0.025 gram/liter = 1 gram.

Compare this to the annual benchmark for alpha emitters of 3.8 x 10^9 Bq and the annual benchmark for non-alpha emitters of 2.1 x 10^{11} Bq (see NIT 111, page 3). Also compare it to the legal limit for the concentration of alpha-emitting plutonium-239 in liquid releases of 4 x 10^{-3} Bq/ml and the legal limit for the concentration of gamma-emitting[1] cesium-137 in liquid releases of 3 x 10^{-2} Bq/ml.

Perhaps a useful way of thinking about the amount of radioactivity involved is to imagine that all gamma radiation came from cesium-137 and that all the leaked fluid was poured into a plastic bucket. In that case the dose at a distance of 1 meter would be 5 mSv/hour. Compare this to the permitted annual dose to the general public of 1 mSv/year and the permitted annual dose for radiation workers of 20 mSv/year (limit over 5 years of 100 mSv).

Clearly it is just as well that this fluid was not released into the environment and that no one was directly exposed to the radiation. This leak illustrates very clearly the dangerous nature of the materials being handled at the Rokkasho reprocessing plant. No doubt the incident will be put down to worker error, but we must question the training standards that allowed such an error to occur. Furthermore, worker error is no excuse when such dangerous materials are involved.

Leak of rinsing fluid within the dissolver cell



Philip White (NIT editor)

(Based on a more detailed analysis by Professor Michiaki Furukawa)

1. Cesium-137 also emits beta rays, but JNFL doesn't mention these. Also, Becquerel is not really appropriate for gamma radiation, but here we have followed JNFL for simplicity's sake.

2006 Electric Power Supply Plan and Nuclear Industry Developments

The latest Electric Power Supply Plan was released by the Agency for Natural Resources and Energy at the end of March. It brings together the plans of all the power companies and is released at this time each year.

Table 1 shows planned construction and startup dates for nuclear reactors. The dates for startup of the 4 Tokyo Electric and the 2 Tohoku Electric reactors have been set back a further year compared to last year's plan. Plans for these reactors have been postponed year after year. The startup date for Namie Odaka has been postponed more than 20 times. (You can see that it is an old plan just by looking at the power output.) In regard to Fukushima I - 7&8, Governor Eisaku Sato has said that he will not approve them during his term in office, which ends in 2009. In any case, the startup date for these will be postponed again in coming years.

Startup dates for the other reactors have been postponed several times in the past. Given that changes to the earthquake design guidelines are expected (refer page 3), it is likely that those currently undergoing safety assessments will be postponed again next year. Indeed, judging from statements by the power companies themselves, the only reactors with any certainty of being operated are the two currently under construction. Peak electricity demand for all the power companies has stopped growing, so it is not in their interests to continue building according to plan. Construction is planned for the 3 reactors currently undergoing safety assessments, but these will be built by wholesale power companies. They face the problem that the power companies to which they hope to sell their electricity, will not want to buy it.

Under these conditions nuclear industry sales continue to fall. The graph below is based on a survey published by the Japan Atomic Industrial Forum (JAIF) on February 10th. JAIF predicts that sales will rise again, but the chances of this happening are not good.

Baku Nishio (CNIC Co-Director)

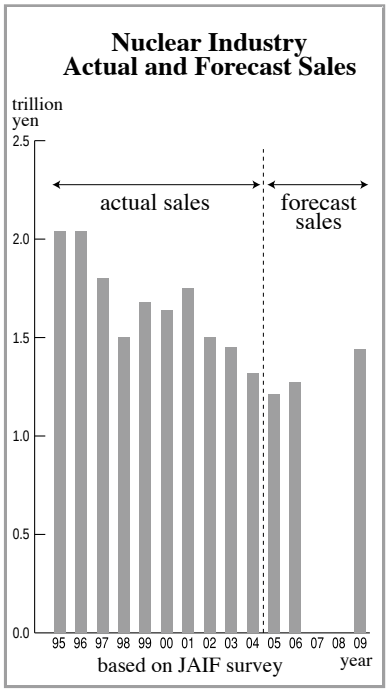


Table 1: Nuclear Power Development Plan (1)

Power Company	Location	Power (MW)	Commence(d) Construction	Commence Operations	Status (2)
Hokkaido Electric	Tomari-3	912	Nov. 2003	Dec. 2009	Under Construction
Tohoku Electric	Namie Odaka	825	2012	2017	
	Higashidoori-2	1,385	After 2012	After 2017	
Tokyo Electric	Fukushima I-7	1,380	April 2008	Oct. 2012	
	Fukushima I-8	1,380	April 2008	Oct. 2013	
	Higashidoori-1	1,385	2008	2014	
	Higashidoori-2	1,385	After 2010	After 2016	
Chugoku Electric	Shimane-3	1,373	December 2005	December 2011	Under Construction
	Kaminoseki-1	1,373	2009	2014	Basic Plan Approved
	Kaminoseki-2	1,373	2012	2017	Basic Plan Approved
J-Power	Ohma	1,383	Aug. 2006	March 2012	Undergoing Safety Assessment
Japan Atomic Power Company	Tsuruga-3	1,538	May 2007	March 2014	Undergoing Safety Assessment
	Tsuruga-4	1,538	May 2007	March 2015	Undergoing Safety Assessment
Total	**13 Reactors**	**17,230**			

1. Table made by CNIC, based on Electric Power Supply Plan for 2006 Fiscal Year (1 April 2006 – 31 March 2007), Agency for Natural Resources and Energy, March 2006
2. Process moves from the Basic Plan, to the Safety Assessment, before commencing construction.

Chernobyl 20th Anniversary Symposium in Tokyo

As promised in NIT 111, CNIC co-hosted an event in Tokyo to commemorate the 20th anniversary of the Chernobyl accident. In the afternoon there was a symposium entitled *20 years after the Chernobyl catastrophe - what happened and what continues now?* Several short videos were shown in the morning and there was also an exhibition including photos and children's pictures.

The videos showed close-up footage of the liquidators, most of them in their shirt sleeves, cleaning up the intensely radioactive aftermath. Those who have not already died, are mostly in poor health. Sadly, the state has all but forgotten them. The bravery awards and the promises of social welfare counted for little when the economy began to collapse.

The focus of the children's pictures was quite different. In picture after picture the most prominent feature was nature, in particular animals and birds: sad, lonely, wounded, but sometimes pointing the way to regeneration and hope.

The keynote speaker at the symposium was Dr. Yuri Shcherbak. Dr. Shcherbak has been sounding the alarm about Chernobyl from the earliest days. Perestroika gathered strength in the years after the Chernobyl accident and in 1989, despite his critical views, Dr. Shcherbak was elected to parliament. After Ukraine gained its independence, he became the Ukrainian environment minister. Then in 1992 he became Ukrainian Ambassador to Israel and subsequently received postings as Ambassador to the US, Mexico and Canada.

He began his speech by referring to the cherry blossom season in Japan. Cherry trees in full bloom grace the streets of Tokyo for no more than a week late March or early April each year. (By April 26th, the anniversary of Chernobyl, they are well on their way up to Rokkasho in the north.) Dr. Shcherbak pointed out that whereas each April cherry blossoms are a symbol of life, Chernobyl is a symbol of death. His account of the accident and its consequences left no one in any doubt that this is true, but his concluding remarks did not counsel despair. Instead, he read us one of his poems, rather haiku-like in form.

The apple trees at Chernobyl
Are flowering once again
Sad recollections
Give birth to bright hope[1]

As in the children's pictures, the human spirit takes inspiration from nature. When thus inspired, hope is indominatable.

Nevertheless, the full tragedy of Chernobyl must be presented truthfully. All the speakers were critical of attempts to underestimate the number of people who died or suffered as a result of Chernobyl. Indeed, they pointed out that reducing Chernobyl to a body count leaves out most of the damage caused by the accident.

Dr. Shcherbak spoke about the difficulty of managing huge scale technology, particularly in unstable or undemocratic countries. Imagine, for example, the problems of managing nuclear power plants in regions of conflict. When war begins, operations must be stopped. Peace keeping forces will be required to protect nuclear power plants. Nevertheless, he did not totally reject nuclear power. To us it seemed that he had made a perfect case for a nuclear phase out, but perhaps he is more pessimistic than us about alternatives, or more optimistic than us that nuclear energy can solve the world's problems. CNIC Co-Director, Hideyuki Ban, clearly stated that he does not believe nuclear energy can solve the world's problems, in particular the problem of climate change.

There were many Chernobyl-related activities in Japan besides the above event. CNIC also issued an appeal in English and Japanese, *Building a 21st Century which is not dependent on nuclear energy*. This appeal can be viewed on our web site: http://cnic.jp/english/cnic/chern26Ap06.html

Philip White (NIT Editor)

1. This translation is adapted from the interpreter's improvised Japanese and English translations.

Group Introduction:

Kansai Relief for Chernobyl Hibakusha

By Katsumi Furitsu*

Kansai Relief for Chernobyl Hibakusha[1] was formed in 1991, five years after the Chernobyl accident and in the same year that a tube ruptured in the steam generator of Kansai Electric's Mihama-1 reactor. We are a grass roots citizens' network united by the belief that we cannot remain silent while people, especially children, are being exposed to radiation, and that Chernobyl must not be repeated in Japan.

Each year for the past 15 years we have visited contaminated regions in the state of Mogilev in Belarus to support and engage with the Chernobyl hibakusha. We have provided material support (such as medicine, medical equipment, baby food and financial assistance for kindergartens and schools), as well as mental and emotional support for people in the disaster area. By building relationships face to face and by feeling both the physical and mental suffering of the people like family members, or as close friends, we have come to know in a much more real way the impact of the accident on people's health and on their lives, on society and on the environment. Also, every few years we have invited victims' representatives to Japan and taken them to Hiroshima and to Fukui Prefecture, where several nuclear power plants are located. At the same time as raising funds, we have used the opportunity to raise awareness of Chernobyl within the Japanese anti-nuclear energy movement.

Sixty one years ago, Japan experienced the atomic bombings of Hiroshima and Nagasaki. Since then, the damage to the health of the Hiroshima and Nagasaki hibakusha, including cancer and leukemia, increased general illness, and numerous other symptoms, has become more and more clear. The social and historical context and the circumstances of the radiation exposure in the cases of Hiroshima and Nagasaki were different from Chernobyl, but in the twenty years since the Chernobyl accident, the same health damage has been seen and it is expected that this will become more and more evident as time goes by. They also share other common problems, such as the destruction of people's livelihood, social discrimination, deliberate underestimation of the damage caused by the radiation by governments which wish to promote nuclear energy, and lack of access to state support. These are problems faced by all types of hibakusha. We link Hiroshima, Nagasaki and Chernobyl and learn from the experiences of all types of nuclear victims, be they victims of nuclear weapons, or of nuclear energy. We hope to continue to work with young people with the aim of creating a world without nuclear victims.

Reading Japanese children's stories at a care center in Belarus

Twenty years since the accident, "Chernobyl" is by no means over. People continue to face numerous problems caused by such things as radioactive pollution, health damage, collapse of the local economy, lack of access to government support, etc., etc.. Also, Chernobyl continues to raise new problems, such as chronic exposure to low levels of radiation and the impact on the health of future generations. We cannot accept the underestimation of the effect of exposure to radiation from Chernobyl by the IAEA and others. They ignore the real situation for the purpose of promoting nuclear energy.

There is no guarantee that a major accident like Chernobyl will not occur in Japan. The Chernobyl accident continues to raise the alarm for us in Japan. With the Chernobyl hibakusha we say, "No more Chernobyls." We also say, "Stop nuclear power plants!" and "Stop the nuclear fuel cycle!"

1. Hibakusha is a Japanese word meaning nuclear victims. It was originally used to refer to victims of nuclear weapons, but has been extended to refer to any victims of atomic radiation. The term is now used worldwide. We included this word in our group's name because we refuse to accept either nuclear weapons or nuclear energy. It also expresses our solidarity with the struggle of all nuclear victims.

**Katsumi Furitsu is a doctor and member of Kansai Relief for Chernobyl Hibakusha. She was one of the speakers at the April 16th Chernobyl Forum.*

NEWS WATCH

Local authority gives green light to Genkai-3 pluthermal plan

On March 22nd, the Saga prefectural assembly decided to recommend that prior consent be given for the pluthermal (MOX) plan at Kyushu Electric Power Company's Genkai-3 (PWR, 1180 MW). On the 26th, the Minister of Economy, Trade and Industry, Toshihiro Nikai, visited Saga's governor Yasushi Furukawa to assure him of the safety of the plan. After receiving the minister's assurance, on the same day Governor Furukawa and the mayor of Genkai, Tsukasa Terada, delivered the prior consent documents to Kyushu Electric's President Shingo Matsuo. The 26th was a Sunday and it is extremely unusual for such administrative procedures to take place on a weekend.

The main reasons behind the rush were: (1) a larger subsidy (nuisance fee) would be given to local governments which gave their prior consent by March 31st (the end of the fiscal year); and (2) showing how the plutonium separated at the Rokkasho reprocessing plant would be used would push the start of active commissioning. Another possible reason relates to the fact that Kyushu Electric has started to supply electricity to a huge shopping mall in Hiroshima. Before liberalization of the electric power market began, Chugoku Electric Power Company had monopoly supply rights for Hiroshima. Kyushu Electric has attracted criticism from other utilities for selling power into another company's traditional market and some people suspect that it is trying to soften these criticisms by becoming the "front runner" in the pluthermal plan. That is an honor that no other utility is keen to take on.

Local citizens set up a sit-in camp in front of the prefectural office building and also held a gathering with about 1,200 participants to show their opposition to the attitude of Saga prefecture and Kyushu Electric. Citizens also surrounded the prefectural office building with a "human chain". This will certainly further strengthen the local opposition movement now that prior consent has been granted.

Approval given for the use of MOX fuel at Ikata-3

On March 28th, the Minister of Economy, Trade and Industry granted approval for the pluthermal plan at Shikoku Electric Power Company's Ikata-3 (PWR, 890 MW) in Ehime prefecture. In order to stop Ehime Prefecture and Ikata Town giving their prior consent, on April 11th members of the Coalition of Citizens of Ehime to Stop the Pluthermal Plan began visiting all 20 towns and cities in Ehime Prefecture to urge them to handle this matter "very cautiously".

Chugoku Electric holds meeting to explain Shimane-2 pluthermal plan

Chugoku Electric Power Company plans to implement pluthermal at Shimane-2 (BWR, 820 MW) in Matsue City in Shimane Prefecture. It held meetings in former Kashima Town (April 15th), former Shimane Town (April 16th) and former Matsue City (April 22nd) to explain the plan to the local residents. (These three merged with another town on 31 March 2005 to become the new Matsue City.) The majority of questions at the meeting expressed opposition or anxiety, but Chugoku Electric says, "there is greater understanding now."

On April 26th, Shimane Prefecture's Plutonium Round-table Meeting released a report that endorsed the granting of prior consent. It will make a final decision at its next meeting before submitting the report to the governor.

Damage to reputation from JCO accident recognized

On April 19th, Tokyo District Court dismissed a claim against nuclear fuel manufacturer JCO by a natto (fermented soy bean product) producer for 1.6 billion yen in lost income caused by damage to the manufacturer's reputation following the criticality accident at JCO's Tokai plant on September 30,

1999. The court recognized the damage to the manufacturer's reputation. However, it limited the amount to only 180 million yen. Since JCO had already made an advance of 210 million yen, the court decision in fact means that the plaintiff must repay the difference of 30 million yen.

Data falsification at Higashidoori

In the NIT 111 News Watch column we reported on Toshiba's falsification of testing data related to a feed water flow gauge at Fukushima 1-6 and also at Kashiwazaki-Kariwa-7. On April 11th, Toshiba reported to the Nuclear and Industrial Safety Agency (NISA) that it had discovered another incidence of the same type of data falsification at Tohoku Electric Company's Higashidoori-1 (BWR, 1100MW). The number of reactors where such data falsification has been found is now three. Data falsification is suspected at five other reactors, but it is impossible to confirm these cases, because the data has been lost. Seven cases have been discovered at thermal power plants and these are now under investigation.

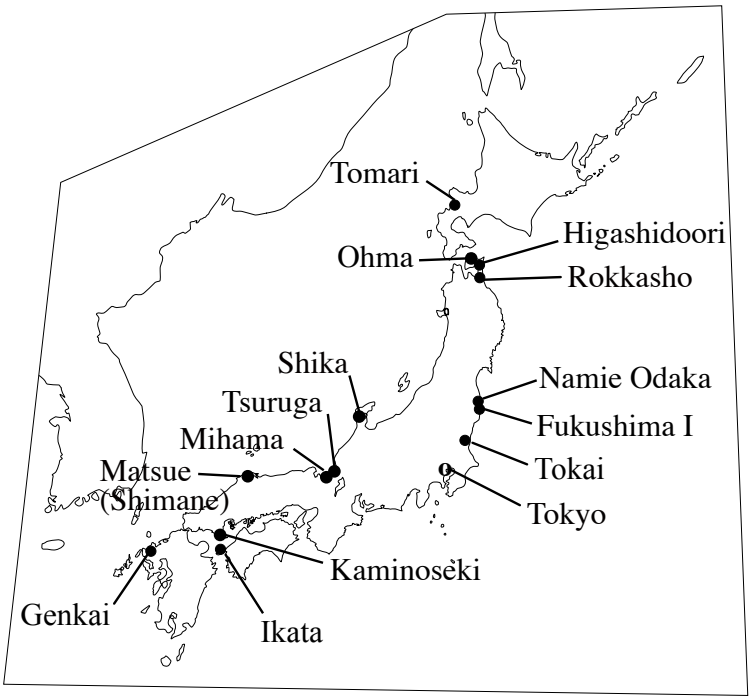
In order to prevent a recurrence, the company is taking the following measures: imposing more severe penalties for improper conduct; establishing an internal contact for whistle-blowers; establishing a new nuclear quality control division.

Revision of earthquake design safety guidelines

On April 28th, the Subcommittee on Earthquake Resisting Design, which is under the Special Committee on Nuclear Safety Standards and Guides at the Nuclear Safety Commission (NSC), released a draft proposal for new guidelines on earthquake-resistant design for nuclear power plants (see page 3). The draft will be discussed at the Special Committee, as well as at the Commission itself, before becoming an official proposal. The proposal will then be put out for public comment. After this procedure, the proposed guidelines will again be examined by the Subcommittee and the Special Committee before the NSC issues a final decision. NSC's decision is expected around August.

It took the Commission more then eleven years (including the preparatory phase) to produce this draft revision. The review process began on 3 February 1995, after a huge earthquake hit southern Hyogo Prefecture on 17 January 1995. It is the first revision of the guidelines by the Japanese government for 25 years.

Map of places shown in NIT 112



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