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Rokkasho Uranium Enrichment Plant Trial

An Unprecedented Verdict,

"You should accept some risk of an accident"

The Group of Plaintiffs Entering the Aomori District Court with a Banner Saying, "Let Our Children Have A Bright Future"

On March 15, the ruling of the first trial on the state's licensing of the uranium enrichment plant now operating in Rokkasho village, in Aomori prefecture, was given. The conclusions of the ruling delivered at the Aomori District Court were: 1) The 14 plaintiffs in Rokkasho village and the adjacent Yokohama town are recognized for their eligibility as the trial's plaintiffs in that direct and serious damage may be inflicted upon them in case of an accident at this facility. However, their claim cannot be conceded; 2) Regarding the 157 plaintiffs nationwide apart from the 14 in the above, they are not qualified as the plaintiffs who may become the victims in case of an accident. The ruling showed a total loss for the citizens' case.

Besides the uranium enrichment plant, which was established first, there are three other facilities,

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including the low-level radioactive waste disposal center, the vitrified waste storage center, and the reprocessing plant under construction. Local citizens are fighting in court for the cancelation of the license of all these facilities. The uranium enrichment plant was licensed for business in 1988, and started its operation in 1992. A lawsuit was filed in 1989, and the trial continued for 13 years. While deliberation was under way, major accidents related to Japan Nuclear Fuel Cycle Development Institute (JNC), took place one after another, including the sodium leak and fire at the 1995 fast breeder reactor, Monju, the 1997 explosion and fire at the asphalt solidification facility in the Tokai reprocessing plant, and the 1999 JCO criticality accident. These and other such accidents seemed to prove that all nuclear facilities are subject to danger from nuclear energy use. Yet, this controversial ruling has come in the midst of a time when the construction of new nuclear power plants and use of plutonium has been suspended due to citizens' opposition.

Press conference on the ruling. After the conference, plaintiffs decided to make an appeal

The court did not understand the reality of the situation. The ruling shows that the court is protecting the nuclear promoters' intention to keep Rokkasho village as an indispensable site for their activities. It says that it is impossible to totally eliminate the danger of an accident, since it is beyond people's capacity to construct a facility which will never have an accident. According to the logic provided by the court, the potential danger of a uranium enrichment plant is very low compared to a nuclear power plant, so the government's safety standard does not have to be as strict. In this respect, the reason for dismissing the residents' claim was almost groundless from scientific points of view.

For instance, the eligibility for becoming plaintiffs was limited to residents in Rokkasho village and Yokoyama town, which was the most limited stipulation in the history of trials relating to nuclear facilities in Japan. The only reason for this was a "common social concept." The citizens pointed out the amount of stored uranium in the uranium enrichment plant is far larger than that in nuclear power plants. They presented a simulation of uranium diffusion which showed that in case of a major accident, residents within the range of 600km will be exposed to radiation larger than the annual permissible dose.

However, the court said, "The damage in the plaintiff's claim is based on the assumption that human beings took in radioactive material widely diffused in the surrounding environment, and it is not directly caused by the accident at the facility." This is simply an unthinkable judgement.

The judge is saying that diffusion of radioactive material through wind which exposes residents is due to the surrounding environment and not due to the facility itself.

The residents also insisted that there is a possibility of a plane crashing into the facility, since the Misawa US base is located 25km south of the plant, and the airspace above the facility is specified as the training area. However, the ruling said, "Regarding the assumption of a plane crash into the plant, in consideration of the characteristics and the amount of uranium contained in the plant, we cannot say that there are mistakes or omissions that should not be overlooked in the safety assessment by the state." This ruling is an incredible one, which is based on an assumption that a crash could never happen.

Before the ruling came out, some plaintiffs had assumed that there would be some sentences pointing out the slipshod nature of safety inspections. They used to say that they would not appeal to the higher court and would instead focus their energy on the reprocessing plant trial. However, the extraordinarily biased recognition made the plaintiffs more determined than ever, and in their meeting immediately after the ruling they unanimously decided to make an appeal.

Decommissioning cost of Fugen: An abandoned reactor of the nuclear policy

1. The decommissioning cost of Fugen

On March 20, Japan Nuclear Cycle Development Institute (JNC) announced the estimated cost for decommissioning and disposing of radioactive waste of Fugen, an advanced thermal reactor (output of 165MW), which is planned to be shut down approximately one year from now. In the announcement, it was revealed that approximately 26 billion yen ($200 million) is needed for the decommissioning, and 42 billion yen ($323 million) for disposing of radioactive waste (see the table). In addition, there is some prospect that 100 billion yen ($769 million) is needed for maintenance and management. Should all the costs be included, the total sum will be approximately 200 billion ($1.54 billion.)

The cost for decommissioning Fugen

Breakdowns	US million dollars (1$=130 yen)
Decommissioning	**200**
Disposal cost	**323**
Transportation	**47**
Disposal cost for the waste generated during operation	**100**
Total	**669**

(Not including the management cost)

The total estimated amount of wastes generated from the decommissioning process will reach 370,000 tons—4,000 of them low level waste, and most of which is estimated to be below the clearance level. In regard to the decommissioning, it will take approximately 10 years' of preparation period, such as sending out the spent fuel, waiting for attenuation of the radiation, and then another 30 years to undertake the fully fledged decommissioning work.

2. An abandoned reactor from nuclear policy

Fugen commenced its operation in 1979, as an advanced thermal prototype reactor, which is the first and only one of its kind in the world. In this kind of reactor, heavy water is used as a moderator, and the composition of the fuel is different from that in a light water reactor. It is called "advanced", since the conversion rate, in which non-fissile uranium 238 is changed to plutonium, is higher than the rate in a light water reactor. The Nuclear power industy had advocated that the reactor could make efficient use of uranium.

However, there were many troubles, and automatic or manual operational shut down due to anomalies of equipment occurred almost every year. When heavy water is irradiated, tritium—a radioactive form of water-is generated. There was also an accident where tritium was leaking from a heavy water purification machine. Moreover, the generation cost is extremely high. For example, heavy water costs 50,000 yen ($385) per liter, and approximately 200,000 liters of it had been used during the whole period of operation. Yet, in 1994, in the Long Term Plan for Nuclear Energy Development and Use, Electric Power Development Co., Ltd. had been planning to construct a demonstration advanced thermal reactor, following Fugen.

However, in 1998, the decision to shut down Fugen was made by the Atomic Energy Commission (AEC). The main reason for this was that the Federation of Electric Power Companies (FEPCO) requested the AEC to review the construction of a demonstration reactor, saying, "We cannot establish economic prospects regarding the new demonstration reactor." The construction cost jumped from the initial cost of 396 billion yen ($3.0 billion) to 580 billion yen ($4.5 billion), and the electricity cost hiked three times as much as LWRs. Accordingly, the FEPCO refused to undertake the plan. In addition, several accidents along with a number of problems experienced by Power Reactor and Nuclear Fuel Development Corporation (a former body of JNC) were exposed, and the public voices demanding for a review of the nuclear cycle business was heightened (Overseas advanced thermal reactors, all of which are the same type as Fugen, have already been shut down.) Now, Fugen is going to be a model reactor, in which research on decommissioning commercial LWRs is going to be conducted.

By Tadahiro Katsuta

**The name Fugen comes from Fugen Bosatu (Buddhist saint). He is riding on an evil elephant, which means that he controls a strong monster with his power of mercy. Relying on such divine power for its name, the government forced its nuclear policy with Fugen, and then, abandoned it after all. To wind up the problems of Fugen, which is an onerous legacy, we will have to be spending enormous amounts of money for a long time to come.*

No to Nuke Waste Recycling! "Citizens' Network on Radioactive Waste Clearance (CBRC), Japan" Established

The so-called Radioactive Waste Clearance for Below Regulatory Concern (CBRC) proposed by the Japanese Nuclear Safety Commission (NSC) is about to be implemented. This will mean that when radioactive waste is under a certain level of radiation, it will be treated as regular waste. Though the government is saying, "It is still premature to make the schedule for revising the regulations publicly," on March 16, citizens groups established a network called the "Citizens' Network on Radioactive Waste Clearance (CBRC), Japan", having anticipated that there would be a move in the near future. The Network aims to highlight the danger of CBRC and eventually to prevent the revision of the regulation.

It was October 1985 when a guideline for the CBRC was established by the NSC. In January 1988, the Radiation Council specified the clearance level as 10 micro Sieverts per year. It's been more than 10 years since then, and the reason for absence of the progress on the CBRC is that a strong opposition from the public, especially workers from the steel industry and waste disposal, was expected.

However, in March 1999, when the decommissioning of the Tokai nuclear power plant (see NIT No. 87) was about to begin, the Subcommittee for Safety Standards for Radioactive Waste in the Nuclear Safety Commission specified a clearance level for waste generated by decommissioning commercial nuclear reactors for each kind of radionuclide.

After that, the same sort of clearance levels were specified for Fast Breeder Reactors and Heavy Water Reactors. Consequently, clearance levels for wastes generated from radioactive isotopes from medical use industry, and research, and for waste containing transuranium radionuclides, and uranium wastes, are being specified.

The waste which releases radioactivity below the clearance level can be reused or recycled as steel material, or dumped just like other industrial waste. In other words, each radionuclide's radioactive level by which people are exposed to less than 10 micro Sv is going to be allowed when radioactive waste materials are reused or disposed.

Yet, since the number of kinds of radionuclides contained in waste is not limited to one, it is necessary to reckon the total radioactivity level produced by the respective sorts, each of which, when measured individually, is below the clearance level. However, in reality, it is almost impossible to measure all the radioactivity from different radionuclides and calculate a total exposure dose.

Accordingly, a method was adopted, in which some standard nuclides are focused on and exposure dose for these radionuclai is given as a percentage of the maximum dose of 10 micro Sv. If the sum is below 100 %, it is considered acceptable. As regards waste generated from the decommissioning of commercial nuclear power

Dr. Sadao Ichikawa, a former Saitama University Professor and a renowned low-level radiation expert, speaks about the risk of CBRC at the commencement of the Network.

Table 1
Standard figures given by the NSC subcommittee for radioactive waste safety standards

(unit: Bequerel/g)

Radionuclide	Safety figures	Figures of TECDOC-855
Tritium	200	1000~10000
Manganese 54	1	0.1~1
Cobalt 60	0.4	0.1~1
Strontium 90	1	1~10
Cesium 134	0.5	0.1~1
Cesium 137	1	0.1~1
Europeaum 152	0.4	0.1~1
Europeaum 154	0.4	-
All α radionuclides	0.2	0.1~1 (In case if Pu239, Am241)

plants, the nine radionuclides shown in the table have become the standard ones.

Regarding the standard figures, apart from the tight standard on tritium as an exceptional case, figures within the range of TECDOC (Technical document) by IAEA are adopted (see the right column of the table). The reason that some adopted figures are varied between the maximum and minimum in the TECDOC range is that assessment was made in consideration of the Japanese lifestyle.

In the case of a softdrink can, the concentration of iron dissolved into the drink and the average annual intake of the drink itself is calculated. In the case of burial of the waste in agricultural land, data on average farmers' working hours, and intake of the agricultural products were calculated. However, one can easily imagine that a slight change in data feeding can radically affect the final figures. In the interim report on tritium, the standard figure came out as seven becquerels per one gram, which was below one 28th and one 140th to 1400th compared to the figure in TECDOC.

In addition, we cannot believe that measurement for radioactivity of enormous amounts of waste will always be undertaken in the proper manner. Regarding the measurement method, the NSC produced a report, issued in July 2001. In the report, it says, "If the substance is clearly seen as free of contamination, the measurement shall be unnecessary," and "Only sample inspections shall be needed as for the substances assumed to have contamination." In addition, it is quite queer that no measurement is supplied for materials for which gamma ray measurement is impossible to carry out.

In conclusion, the CBRC regime cannot guarantee at all whether it can control all the waste under 10 micro Sv. A figure below 10 micro Sv does not mean safety, either. Moreover, radioactive waste should not be disposed as if it were industrial waste, or be used for daily products - this is the conclusion from the citizens who gathered for the Cordination Committee on the Clearance Issue. Fifty-five people from 15 different prefectures gathered at the Committee. In the commemorating speech, Dr. Sadao Ichikawa, a former professor at Saitama University, stated that the only option for us to choose is a nuclear phase-out at the earliest possible stage to reduce the volume of radioactive waste, together with tight controls on the existing waste in the future.

By Baku Nishio

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The Planned Rokkasho MOX Plant Plagued with Problems

The plan for constructing a full-scale commercial MOX fuel processing plant, the first one of its kind in Japan, which is called as J-MOX, is underway in Rokkasho Village in Aomori Prefecture.

Japan Nuclear Fuel Limited (JNFL) is now planning to construct a MOX plant which will use plutonium produced at their reprocessing plant on the same site. In August 2001, JNFL submitted their request for the approval of their plan to Aomori prefecture and Rokkasho village. In February 2002, a local explanatory meeting was held on the outline of the plan, hosted by the Agency for Natural Resources and Energy, with the participation of the Federation of Electric Power Companies and JNFL.

So far, the only facility which has fabricated plutonium-bearing fuel is a small facility called, the Plutonium Fuel Fabrication Facility and Plutonium Fuel Production Facility, owned by Japan Nuclear Fuel Cycle Development Institute (JNC). Accordingly, the Atomic Safety Commission is speeding up efforts to produce guidelines for a safety inspection for this facility. Below is a summary of the plan based on the documents which have so far been made public.

1. Outline of the plant

The following is the summary of JNFL's construction plan for the Rokkasho MOX Plant.

The MOX powder is composed of powder (50% plutonium and 50% recovered uranium) from the Rokkasho reprocessing plant, depleted uranium for dilution (now being stored at the Rokkasho uranium enrichment plant), and natural uranium. Besides, 100% plutonium powder could be used as MOX fuel. The plant will be constructed right next to the Rokkasho reprocessing storage building, and the material powder for fabricating MOX fuel will be transferred through an underground trench.

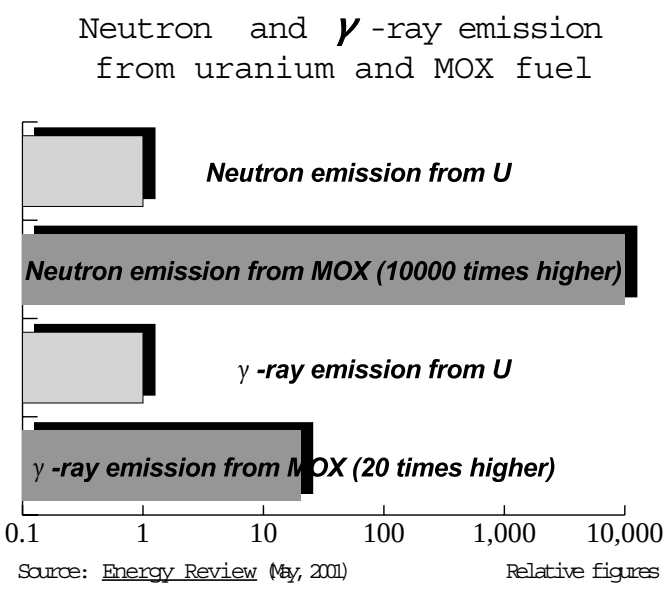
The plant is capable of fabricating approximately 130 tons of MOX fuel annually for both BWR and PWR fuels. This figure represents an estimate volume, in which the entire volume of plutonium, approximately eight tons, produced under full operation of the Rokkasho Reprocessing plant would be used for MOX fabrication.

In this facility, COGEMA's MIMAS (Micronized Master Blend) method is adopted for the powder mixing technology, in which there are two stages of the mixing procedure. The technology, such as molding, sintering, polishing, etc, is provided by JNFL, whereas fabricating and assembling are provided by Nuclear Fuel Industries, Ltd., which has been fabricating LWRs' fuels. There is only one fabrication line, which means that there is no separation between BWR and PWR fuel lines.

Various pieces of equipment placed on the fabrication line are, however, switched from time to time, in accordance with the fuel type. This is probably for the purpose of reducing the construction cost of the factory, but this kind of system would raise the possibility of a variety of accidents and malfunctions, including equipment troubles, wrong exchange, and so on. MOX fuel is forced to cool down by air in storage. Most of the process employs a dry system, and there is only a part of a wet system employed at a facility in the process of analysis. JNFL explains that scrapped powder of MOX, which contains a high level of impurity, cannot be returned to the fabrication line and should be stored for the time being. According to JNFL, the rejected powder will be refined in the reprocessing plant if needed. The construction cost for the facility is approximately 120 billion yen ($920 million), and the commencement of the operation is scheduled to be in April 2009. (The reprocessing plant is planned to start up its operation in July, 2005.)

2. The miscellany of technologies under development

The government and Federation of Electric Power Companies (FEPCO) have been advocating European MOX fabrication records in Japan. However, due to the inspection data scandal of MOX fuel, which was manufactured at the MOX Demonstration Factory (MDF) in Sellafield,



England, for the Takahama nuclear power plant owned by Kansai Electric Powder Company, the credibility of overseas fuel fabrication was lost. On top of that, the MOX fuel for the Fukushima nuclear power stations and Kashiwazaki-Kariwa station, both of which are owned by Tokyo Electric Powder Company is fabricated in MIMAS method by Belgonuclear, a company in Belgium. However, because the information disclosure on quality assurance was inadequate, the loading of MOX fuel is being rejected by local municipalities and citizens. Currently, MOX fuel fabrication commissioned to overseas companies is in complete stalemate due to technical and safety problems. Therefore, there are no nuclear reactors at which the fuel has been loaded or even planned to be loaded.

Japanese MOX fuel has been fabricated only in the Plutonium Fuel Development Section in JNC. Some of the plutonium processed at this facility had been separated at Tokai Reprocessing plant and some had been returned from Europe. However, the total amount of the processed MOX fuel for the past 30 years reaches approximately only 150 tons. Compared to the 130 tons that will be fabricated each year at the Rokkasho plant, the volume of manufacturing at Tokai plant is so small that it can only be called a family industry. Moreover, most of the fabricated fuel was for Fugen (an advanced thermal reactor), and Joyo and Monju (fast breeder reactors); there is no record of fabricating MOX fuel for light water reactors. JNFL has never conducted a mass production of MOX fuel. Therefore, JNF and JNFL have just begun transforming the MOX fabrication technology from their small-scale industry to an automated large scale industry.

According to the Japan-US Agreement on Peaceful Uses of Nuclear Energy, both the reprocessing plants in Tokaimura and Rokkasho villages are prohibited from separating plutonium of 100 % concentration. Because of this agreement, separated plutonium solution is mixed with uranium solution in the ratio of one to one. To make the powder form of this, a uranium-plutonium mixing denitration process, MH Process (Microwave Heating Process) is adopted. The development and verification processes of various technologies are still underway, These includes: powder concentration adjustment process, fuel press molding, sharing manufacturing lines between BWR and PWR to cut the cost, remote and automated technical operation and verification tests, inspection of soundness of glove boxes and confinement function, and so on. All of the technologies are either in development stage or in demonstration stage at best. In this way, the Rokkasho MOX plant construction plan does not have any technical endorsement.

3. Particular issues relating to J-MOX

As mentioned above, the plutonium fabricated in the Rokkasho reprocessing plant is composed of a one-to-one ratio of plutonium and recovered uranium. There is a problem unique to J-MOX. In the MOX plant, radiation emitted from plutonium is much higher than from uranium (in the case of neutron rays, it is 10,000 times higher, and in the case of gamma rays, 20 times higher). Accordingly, occupational exposure of the factory workers is very serious even during normal operation. In addition, since uranium 232 and its daughter nuclides recovered from reprocessing are used, blocking more gamma rays will be necessary, which will lead to increase of occupational exposure.

Processing 100% plutonium has become acceptable through licensing, but at the same time, some point out that Japan will import 100 % plutonium from European nations.

By Masako Sawai

2002 Electricity Supply: Contradictions of Electric Companies

In March, the Federation of Electric Power Companies (FEPCO) announced that the total electricity sales of the ten electric companies, compared to the same month of the previous year, have been down for seven months in a row. This is a record for the 51 years of the electricity industry.

Table 1. Outline of 2002 electricity supply plan

	2000 (Recorded)	2001 (Estimated)	2002 (Planned)	2003 (Planned)	Growth rate (2000～2011)
Total demand [GWh]	837,900	825,500	818,900	958,700	1.2
Peak demand [1000MW]	169,820	174,990	171,010	197,050	1.4
Supply capacity [1000MW]	191,340	191,110	192,710	217040	1.2
Reserve rate [%]	12.7	9.2	12.7	10.1	-

Meanwhile, at the end of March, the ten general electric utilities and three wholesale electric utilities announced their electricity supply plan for the year 2002. It is obligatory to submit this plan to the Ministry of Economy, Trade, and Industry (METI) each year. The plan includes the prospect of electricity demand in the coming 10 years, the construction plans for power plants, and so forth. Below is a brief summary of this plan.

1. Electricity companies suffering from low demand

The outline of the 2002 electricity supply plan is shown inTable 1. The total electricity demand in 2002 was 818,900 GWh, 6,600 points down from the previous year. The peak electricity demand for 2002 is expected to be 17,100 GW, 3,980 points down from the previous year, which was the second reduction in a row, reflecting the deteriorated economy and the effect of energy conservation. The average annual expected growth rate of electricity demand and the peak demand for the coming 10 years turned out to be 1.2% and 1.4% (both are record low estimate figures), which in both instances corresponded to -0.3 % compared to the estimated figure from the previous year. However, since the estimates are still on the rise, and the supply is kept on the increase, the reserve ratio is now more than sufficient, and would go up around 10 %.

Meanwhile, it is worth noting that the capital investment is kept lower than the previous year. Apparently, electric companies are preparing for the competition of the liberalized electric market in which new stakeholders will join. The total sum of the capital investment by the ten electric companies this year was 2,445 billion yen ($14 billion), which is -10 %, compared to the previous year, and only half the amount of the peak, 4,934 billion yen ($38 billion), in 1993. Streamlining of management is taken up as one of the ways to reduce the investment. Tokyo Electric Power Company (TEPCO) plans to reduce by half the number of patrol inspections on transmission lines and transformer substations, which would result in a five billion yen cut.

2.Counterfeit measures against global warming

Let's take a look at each electric source. As regards oil thermal power stations, the installation capacity was lowered in order to reduce the dependency on overseas sources, and as part of measures against global warming. The Kansai Electric Power Company (KEPCO) has suspended its long-term plan for oil thermal power since 2000, and in addition to the suspended capacity of approximately 4,300 MW, a further 900 MW will be suspended this year.

As regards nuclear power, the previous plan has been strictly sustained. Despite public concerns, Chubu Electric plans to resume the operation of the two Hamaoka nuclear power plants, operation of which is now suspended due to the accident in November 2001 at Hamaoka 1. Moreover, Chubu Electric plants to suspend the operation of five thermal plants with a total capacity of 1,660 MW, and it plans to start up the operation of Hamaoka 5 (1,380MW) in 2005.

Table 2 shows the current status of the nuclear power development plan. Onagawa 3, owned by Tohoku Electric Power Company, started commercial operation in January 2002, and 12 more nuclear power plants with a total capacity of 16,110MW are planned to commence their operation in the future. However, as in the past, there are many plans which have been postponed. At present, though the process of establishing and constructing is long and complicated, there are only three plants currently being constructed. In reality, most of the plans do not have any realistic prospects due to citizens' anti-nuclear movements, etc. Even among people in the electric industry, there are voices of doubt as to the realization of such plans.

Table 2
Nuclear development plan in the 2002 electricity supply plan

	Power plant	Electric company	Output (1000MW)	Issue of license	Start of construction	Start of operation	Progress status
1	Higashidori 1	Tohoku	110	1996	1998	2005	Under construction
2	Hamaoka 5	Chubu	138	1997	1999	2005	Under construction
3	Shika 2	Hokuriku	135.8	1997	1999	2006	Under construction
4	Tomari 3	Hokkaido	91.2	2000	2003	2008	Safety inspection
5	Fukushima 1-7	Tokyo	138	2002	2004	2008	Postponed for one year
6	Fukushima 1-8	Tokyo	138	2002	2004	2009	Postponed for one year
7	Ooma	EPDC	138.3	1999	2004	2009	Postponed for one year
8	Hiagashidori 1	Tokyo	138.5	2002	2005	2010	
9	Shimane 3	Chugoku	137.3	2000	2003	2010	Safety inspection
10	Tsuruga 3	JAPCO	153.8	2002	2005	2010	Postponed for one year
11	Higashidori 2	Tokyo	138.5	2002	2005	2010	Postponed for one year
12	Tsuruga 4	JAPCO	153.8	2002	2005	2010	Postponed for one year
13	Higashidori 2	Tohoku	110	2003	2006	2011	
14	Maki 1	Tohoku	82.5	1981	2006	2012	Postponed for one year
15	Kaminoseki 1	Chugoku	137.3	2001	2007	2012	
16	"Namie, Odaka"	Tohoku	82.5	2006	2008	2013	Postponed for one year
17	Suzu 1	Hokuriku	135	2005	2008	2013	Postponed for one year
18	Suzu 2	Hokuriku	135	2005	2008	2013	Postponed for one year
19	Kaminoseki 2	Chugoku	137.3	2001	2010	2015	

Meanwhile, a large-scale increase of coal thermal power is planned. While the total capacity is expected to be 24,860MW in 10 years, with oil accounting for 2,000MW, and LNG for 8520MW, and coal thermal, the biggest CO_2 emitter, will produce 13,840MW, which accounts for more than half the thermal power.

While reducing the dependency on oil, whose fuel cost is high, electric companies are trying to increase the dependency on cheap coal. Moreover, they are promoting nuclear energy, to which citizens are strongly opposed, as a countermeasure against global warming. On almost every day, electric companies promote themselves as environmentally friendly companies on TV and in newspaper advertisements. However, they have simply taken advantage of the breakdown of electric source to obtain more profits. At the same time, they voluntarily established a 20% CO_2 reduction goal (compared to 1990). It seems that they need to promote nuclear energy to make ends meet.

The capacity plan of pumping-up power plant[1] has been greatly moderated compared to the previous plan. Yet, an increase is expected, resulting in a total sum of 2,740MW for the next 10 years. Since it is difficult for a nuclear power plant to adjust output, it is believed that more pumping-up power plants would be used for consuming electricity for merely pumping up water at night when the demand is low, with the increase of nuclear power. We can observe that there are negative impacts for other sources of electricity, due to the government's adherence to nuclear policy.

3. Electricity supply plans not for citizens or future generations

Electric companies are placed in a predicament, due to the upcoming liberalization of the electricity market, prolonged economic recession, ratification of the Kyoto Protocol, and other factors. Therefore, it is a right decision for them to eliminate some wasteful investment by streamlining management. However, seeking short-term profits out of an economy-first mindset seems to be prevailing. Of course, electric companies are the industry that makes profits by selling electricity. However, if they do not formulate and put into practice plans based on a long-term vision (looking at least ten years into the future), and if they continue to promote superficial environmental measures rather than giving serious consideration to the welfare of citizens and future generations, we will all be left with the onerous legacy of a hazardous and redundant nuclear policy.

ByTadahiro Katsuta

Note (1): A pumping-up power plant is a kind of hydro electric generation system. When electricity demand is low as in night time or holidays, water in the lower reservoir is pumped up into a higher reservoir using surplus electricity. When electricity demand is high, water in the higher reservoir is used for generation. This system is particularly used to meet demad peaks. However, there is a problem of low energy efficiency, since electricity is wasted when pumping up water.

Anti-Nuke Whos Who

Shizuko Senou: A Japanese Housewife Joan of Arc

By Seigo Nishie

A member of The Society for Seeking a Prefectural Ordinance to Say No! to Nuke Waste

Okayama prefecture is located west of Hiroshima prefecture, where the atomic bomb was dropped in 1945. In 1981, tunnel testing was conducted in the limestone layers under Okayama. This testing was conducted for the purpose of high level radioactive waste disposal site selection. This was the first time people heard the term "high-level waste" used. Since then, Mrs. Shizuko Senou has become one of the most active participants of the movement against geological disposal of high-level waste.

Two years after the Chernobyl accident in 1986, a power adjustment test (load following test) was scheduled to be implemented at the Ikata nuclear power station, owned by Shikoku Electric and located in Kagawa prefecture. Millions of petition signatures against the test were collected in a short time. In Okayama prefecture as well, a vigorous petition campaign took place, and Mrs. Senou was a central figure in this effort.

The granite layers in the Chugoku area where Okayama prefecture is located are 50 to 60 million years old and considered to be among the relatively stable geological structures in the Japanese archipelago. In 1985, there was a time when the Japan Atomic Industrial Forum, Inc (JAIF) attempted to take steps forward to implement boring inspections at several locations. However, due to opposition by local residents from surrounding cities and villages, the inspections were cancelled. In spite of this, however, many suspicious movements related to high-level waste disposal continued. Therefore, in May 1989, the main activists in Okayama gathered at Ningyotoge (location of Japan's only uranium mine) where a serious discussion took place over the issue of unifying their movements. Finally, they decided to have one single movement in Okayama, instead of having separate movements in each city and village. It was Mrs. Senou who led the discussion for reaching this agreement.

Around the same time, national government and electric utility efforts to select a site for high-level waste disposal began to become more concrete. In October 1989, Ms Senou and her colleagues initiated preparations for a petition campaign seeking implementation of a prefectural ordinance rejecting the introduction of a disposal site. The petition movement started in the summer of 1990, and was limited by law to a three-month period. The petition spread very rapidly, and 340,000 signatures were collected out of a total 1.4 million voters, considerably surprising the prefectural assembly. In the history of prefectural administation, never before had such a large number of signatures been collected. Also, what was unique was that housewives led the effort. And Mrs. Senou, like a Joan of Arc, was always at the helm.

Although the proposal to put in place an ordinance to reject disposal siting was voted down due to opposition by the conservative party majority, following the extraordinary prefecture legislative session, the governor of Okayama stated, "I have no intention of introducing a facility which brings concern to my residents." His statement has become the official political commitment of Okayama prefecture.

Ten years have passed since the petition campaign. The "Prefectural Ordinance News" now in its 59th issue still continues to provide information on high-level waste issues. Every issue contains illustrations by Mrs. Senou. Owner of a sign board shop, and having had an artist (painter) as a father, she produces all the signs and placards for seminars and rallies of the movement. Mrs. Senou's artistic skills have indeed always been a great asset to the movement. One can say she is the "mother" of the Society Seeking a Prefectural Ordinance to Say No! to Nuke Waste. She is one of the important faces of the movement. She is a lively woman, but at the same time, her calm and clear-sighted judgment is widely acknowledged.

NEWS WATCH

Plans to Scrap Monju and Fugen

On March 20, the Japan Nuclear Cycle Development Institute (JNC) submitted its basic plan to Fukui Prefecture and Tsuruga City, concerning decommissioning of Fugen, an advanced thermal reactor (165 MW) whose operation will be terminated at the end of March 2003. According to the plan, the ten years after the end of the operation will be used as a preparatory period, during which spent fuel will be shipped out and the technology of dismantling will be developed. Dismantling operations will then begin after that. The period of dismantling is considered to be less than 30 years, and in order to reduce costs, JNC wants to shorten the period to a dozen years or so.

The waste to be generated by decommissioning is estimated to be about 370,000 tons, 360,000 tons of which are said to be below the clearance level. According to JNC's trial calculation for Fugen, it would cost ￥36 billion ($277 million) for dismantling, ￥31 billion ($238 million) billion for the treatment of waste, ￥5 billion (38.4 million) for transport, and ￥10,2-13 billion ($78.4-100 million) for disposal.

JNC has also done a similar trial calculation on the cost of decommissioning Monju, a fast breeder reactor (280 MW), at which JNC is trying to re-start operation. According to the calculations for Monju, it would cost ￥68 billion for dismantling, ￥79 billion for the treatment of waste, ￥11 billion for transport, and ￥16-18 billion for disposal.

The construction cost of Fugen, which went critical in 1978, is said to have amounted to ￥68.6 billion, and Monju, which went critical in 1994, ￥590 billion.

U.S. Approves Return of MOX Fuel from Takahama

The U.S. government informed the Japanese government on 6 March that it would approve the transport of eight MOX fuel assemblies, containing 255 kg of plutonium. Their return to BNFL from Kansai Electric Power Co. was agreed in July 2000 between the government of Japan and the United Kingdom, because the quality control data were revealed to have been falsified. Since uranium of US origin was used in the original fuel, from which the plutonium for the MOX fuel was extracted, it was necessary to get the approval of the United States for moving nuclear substances.

With the approval of the U.S. government, the preliminary procedures for return transport have been almost completed. As in the case when the MOX fuel was transported from the U.K to Japan in July-October 1999, two armed transport ships will be used for the return.

Additional MOX Fuel Fabrication for Kashiwazaki Nuclear Plant Begins

On March 8, Tokyo Electric Power Co., announced that the manufacture of 60 MOX fuel assemblies for Kashiwazaki-Kariwa 3, which TEPCO had ordered from COMMOX in France, has begun. The 28 MOX fuel assemblies manufactured by a Belgian company, Belgonucleaire, were already shipped to the plant in March 2001. However, in the referendum held in the village on the use of MOX fuel, the majority voted against it (See NIT No. 84), and the fuel has not been loaded into the reactor. Although the new fuel assemblies have begun to be manufactured by the French company Cogema at its MELOX facility, there is no prospect of loading this fuel. TEPCO's recent announcement has further strengthened the resistance of residents of Kashiwazaki City, and Kariwa Village.

Residents of Irradiated Building Win Case

In a lawsuit filed by residents of buildings contaminated with Cobalt 60 in Taipei City, the residents achieved victory. The claim was against

the Atomic Energy Commission of Taiwan (AEC), demanding compensation for health damages. Responding to the ruling, in which the high court admitted the AEC's wrongdoing in January, the AEC on 25 March decided not to appeal and instead apologized to the plaintiffs. Approximately NT$72 million is to be paid out to 48 plaintiffs.

It was in July 1992 that the problem of irradiation of buildings including apartment houses was exposed. An anonymous letter sent to a newspaper company was the beginning. Through later investigations, it was confirmed that nearly 50 buildings had been irradiated not only in Taipei City but throughout Taiwan.

The cost of Decommissioning and Reprocessing to Amount to ￥30 Trillion by 2045

The estimated cost of nuclear waste management, decommissioning, and reprocessing will amount to 30 trillion yen ($230 billion) by the year 2045, according to the Federation of Electric Power Companies' calculation.

This estimate is the first of its kind in Japan, and it was calculated on the assumption that the Rokkasho reprocessing plant, whose commencement is planned in 2005, would have an operation period of 40 years, the same period as the existing 52 commercial reactors in Japan. Among the 30 trillion yen, 10 trillion yen would be spent on the reprocessing plant-related expenditure.

The officials say that they can provide only a temporary figure since the cost can be varied in accordance with the regulation on the radioactive waste clearance level that is to be established in the future.

With the introduction of the electric market liberalization, to be accompanied by fierce competition, the Japanese electric industry is importunating the government for new subsidies. There are even some opinions from electric companies to call for a moratorium on the commencement of the reprocessing plant operation.

Commencement of Lawsuit Seeking Injunction on Hamaoka Nuclear Plants

On April 25, 2002, more than a thousand plaintiffs, mostly citizens, are going to file a lawsuit against Chubu Electric, the operator of Hamaoka nuclear power station in Hamaoka town, Shizuoka prefecture, claiming that all the Hamaoka nuclear reactors should be shut down.

There are four nuclear reactors in Hamaoka, with Hamaoka 3 and 4 currently operating. Last November, Hamaoka 1 (BWR, 540 MW) had two major accidents; one was a pipe rupture caused by a hydrogen explosion and the other was a water leak from the reactor vessel.

Due to these accidents, Hamaoka 1 and 2, both of which were constructed in the 1970s, have been temporarily shut down. While there is a growing concern about the aged reactors among citizens, Chubu Electric has said that it would resume the operation of Hamaoka 1 and 2 within a few months.

The Hamaoka nuclear power plants are located in the middle of an intraplate earthquake-prone region, where the Great Tokai Earthquake is predicted to occur. This quake, which a number of seismologists have predicted could occur within a few years, could well be 15 to 30 times more powerful than the 1995 Hanshin earthquake.

SUBSCRIPTION

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. Please write to us for a subscription (Regular subscriber - $30 or ¥3,000/year; supporting subscriber $50 or ¥5,000/year). When paying in Japan, the subscription fee should be remitted from a post office to our post office account No. 00160-0-185799, HANGENPATU-NEWS. Due to costly processing fees on personal checks, when sending the subscription fee from overseas, please send it by international postal money order. We would also appreciate receiving information and newsletters from groups abroad in exchange for this newsletter.

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