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## Further delays at Rokkasho Reprocessing Plant



*Sit-in outside Ministry for Economy Trade and Industry*

**O**n November 18th Japan Nuclear Fuel Ltd. (JNFL) announced that active trials (using spent nuclear fuel) at the Rokkasho Reprocessing Plant will be delayed two months to February 2006. Start-up of Rokkasho will also be pushed back two months to July 2007.

The announcement was made while demonstrations were being held in Tokyo opposing the reprocessing plant in general and the impending active trials in particular. Sit-ins, demonstrations and public meetings were held from November 16th - 19th. Two overseas speakers were invited to participate. Martin Forwood of Cumbrians Opposed to a Radioactive Environment spoke about problems at the THORP reprocessing plant in the UK. He emphasized that the Rokkasho Reprocess-

ing Plant project should be cancelled before similar problems arise in Japan. Professor Hong Seong Tae of People's Solidarity for Participatory Democracy gave a South Korean perspective on Rokkasho, stressing proliferation and environmental concerns. Martin also spoke in Morioka (Iwate Prefecture) on the 20th and in Aomori on the 21st.

The major reason for the two-month delay is modifications to the vitrified high-level waste storage

facility (see NIT 105). It was discovered that, due to a design error, the cooling system of buildings in this facility was inadequate. The governor of Aomori Prefecture indicated that he wouldn't give his approval for active trials until this problem was fixed. JNFL now says that these modifications will be completed by the end of this year.

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On November 9th JNFL released its latest progress report on the uranium trials (using depleted uranium), which are currently being conducted. The report failed to provide evidence to support JNFL's claim that the uranium trials are proceeding smoothly. Rather, it showed that JNFL is nowhere near ready to enter the active trial phase. Of greatest concern, there is no indication that JNFL plans to undertake a true test of the whole process. JNFL claims that it will conduct comprehensive trials of the whole plant, but there is no indication that it will run uranium from beginning to end in such a way that inputs and outputs can be quantitatively compared. Unless a test is conducted showing how accurately inputs and outputs balance, it will be impossible to judge whether it is safe to proceed to active trials.

In addition to the general problem of testing the whole plant, CNIC is also unsatisfied with the information that has been released. While we recognize that nuclear safeguards requirements impose limits on what can be made public, in this case essential information is being withheld simply for commercial confidentiality reasons. On the basis of the information released, it is impossible to ascertain how much progress has really been made with the uranium trials. The report repeats formulas such as "within the target level", providing few numerical values to back up its assertions.

Active trials entail far greater dangers than the uranium trials. They involve much higher levels of radioactivity and they carry the risk of a criticality accident. These are not things to be treated lightly for the sake of meeting arbitrary schedules. It is simply not good enough for JNFL to say 'trust us' and expect to be allowed to proceed to active trials.

Philip White (NIT Editor)

### Haiku Group Introduction

Since the beginning of this year, we have included a haiku in each issue of NIT. These haiku were provided by members of the Aoba English Haiku Circle, named after the ward in Yokohama city where the group is based. "Aoba" means "green leaf" and the members say they try to remain as fresh as "aoba". The group has fifteen members and has been meeting once a month since 1997.

Haiku has been one of the mainstreams of Japanese culture since the haiku poets Basho and Buson, who were active in the 17th and 18th centuries respectively. In recent years, more and more people all over the world are writing haiku in their own languages. With just 17 syllables, haiku is the shortest form of poetry. Haiku express the writer's love of nature and the four seasons.

Members of the Aoba English Haiku Circle submit haiku based on seasonal words to each monthly meeting. They hope you enjoy their contributions to NIT.

### Haiku for the Season

*Autumn leaves  
form a shifting mosaic  
on the wind-swept pond*

by Michiko Murai

*Continued from page 6* of a woman crew person in the early and undetected stages of pregnancy. While it is not possible to manage perfectly radiation exposure from cosmic rays, or to avoid all risk completely, it is important to develop more concrete guidelines to lessen unnecessary exposure.

Further, this investigation covered aircraft crew only and did not include debate on persons who frequently use aircraft for work (such as tour conductors, etc.). It is necessary to make sure that in the future the radiation exposure of such persons can also be managed.

Ikuko Kuwabara (CNIC)

## Nuclear Policy Planning Council in review

**O**n September 29th the Nuclear Policy Planning Council (Planning Council) submitted its final draft of the Nuclear Energy Policy Outline (Policy Outline) to the Atomic Energy Commission (AEC). AEC endorsed the Policy Outline on October 11th and, three days later, on the 14th it was authorized by a Cabinet decision, which stated, "The Policy Outline will be respected as the basic direction of nuclear energy policy, and research into and development and utilization of nuclear energy will be promoted."

As stated in NIT 108, in the past the equivalent document was referred to as the Long-term Program for Research, Development, and Utilization of Nuclear Energy. The name change stems from a reorganization of government agencies. In 2001, the agency responsible for the promotion of nuclear energy, the Science and Technology Agency (STA), was dissolved. Its responsibilities were divided between the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Ministry of Economy, Trade and Industry (METI). Previously the Minister in charge of STA was also the chairman of the Atomic Energy Commission. However, after the reorganization, AEC was no longer chaired by a government minister. Consequently, it was no longer possible for the AEC to draw up government programs in its own right and the name had to be changed. The contents of the Policy Outline indicate the "basic thinking". They fulfill the role of nuclear policy guidelines for the various government agencies.

This is a very big change, because it means that nuclear energy has ceased to be the center of energy policy. As explained by METI in the course of the Planning Council's deliberations, this means that we have changed from an era of "renewable energy or nuclear energy" to an era of "renewable energy and nuclear energy".

The fact that for the first time a proponent of a phase-out of nuclear energy was included on a government panel established to consider nuclear energy policy is another sign of the changing

times.

### Basically unchanged from past policy

However, the Policy Outline continues the nuclear fuel cycle policy of the past. I was totally opposed to this, so I submitted a minority opinion. I had submitted written comments to almost all of the meetings, so my 'minority opinion' was basically a summary of those comments. Two members of the Planning Council submitted minority opinions. This might be common practice overseas, but it was strongly opposed within the Planning Council. Those opposed took the view that it was unnecessary to append minority opinions to the report for reasons such as the following: the members' written and oral comments are publicly available; there was sufficient discussion within the Planning Council; public comments were called for on two occasions; the Policy Outline is the outcome of this process. In the end the chairman decided that the minority opinions would be appended to the Policy Council's draft report.

I submitted a minority opinion, because the draft Policy Outline contained things with which I was fundamentally unable to agree. One problem was the inclusion of numerical goals for nuclear power production, development of the fast breeder reactor (FBR), and so on. The goal for nuclear power production was set at 30%-40% or more of total electric power. This level is to be maintained beyond 2030. It was thus accepted that the operating life of nuclear reactors will be extended to 60 years. Indeed, implementation of the new nuclear energy policy is premised on such extensions. Furthermore, in order to increase output, the Policy Outline endorses power upratings and extending the time between periodic inspections to 18 months or more. However, these measures will increase the risk of nuclear accidents.

I was also unable to agree with including a date of 2050 for the realization of FBR. There was almost no discussion of this point. The government provided estimates of the doubling

time for a variety of reactor designs. The estimates ranged from 40 years to 200 years. Essentially, what this means is that FBR will never become a reality. Nevertheless, the "basic thinking" was declared to be that FBR would be realized by 2050. This date was arrived at by considering the desired nuclear power production outcome and calculating from that when FBR would need to be available. However, it appeared to this writer that this is nothing but an illusion created to accommodate the vested interests of the nuclear industry.

Another problem was the fact that the Policy Outline continues the past nuclear fuel cycle policy. This was the biggest issue addressed by the Planning Council. There was strong resistance within the nuclear industry to attempting an overall policy assessment which included the direct disposal (once through) option. The fact that an overall policy assessment approach was adopted is, in my view, to be commended. However, I was acutely conscious of bias in each item for assessment. This bias reflected a firm intention to continue with the existing nuclear fuel cycle policy. No doubt there was strong pressure from the nuclear industry.

The influence wielded on nuclear policy by local regions dependent on the nuclear industry and keen to promote regional development was very visible. I understand that direct subsidies to local governments are not provided to promote nuclear development overseas. In Japan, however, there is a system whereby the central government provides subsidies to local governments which accept nuclear facilities. This makes these local governments economically dependent on nuclear facilities. The governor of Aomori Prefecture stated that if a decision is made to cancel the Rokkasho Reprocessing Plant he will refuse to accept spent fuel for storage. This had a big impact on the Planning Council's deliberations.

It became the basis for a spurious desktop calculation, which purported to show that the cost of changing the existing reprocessing policy would be 23 trillion yen over the next 20 years. In the course of the debate, it became clear that the government and the power companies are totally

incapable of extracting themselves from Aomori.

The process did not allow the discussion to deviate from the assumption that the Rokkasho Reprocessing Plant would reprocess 800 tons of spent fuel per year for 40 years. The possibility that it might only reprocess half that amount was beyond the terms of the analysis. However, one can predict that such an eventuality would cause great problems further down the track. It is my view that the correct choice is to withdraw from reprocessing now, before such problems arise.

### **Japan's nuclear energy policy future**

A manufacturers' representative on the Planning Council expressed great satisfaction that new nuclear power plants would be built to extend nuclear power production beyond 2030. That's not surprising given that the nuclear manufacturing rush has passed, their sales are in free fall and it is becoming increasingly difficult for them to maintain a skilled workforce.

However, the new plant priorities of power companies are shifting from compliance with government policy to economics. Electric power demand is not growing, so even if their basic preference is for new construction, things probably won't pan out that way. In sum, the Nuclear Energy Policy Outline sounds more like a fanfare for a nuclear industry in decline than a realistic policy.

For me, it represents the end of a tension-filled 16 months. Attending 33 meetings of the New Nuclear Policy Planning Council was an exhausting experience. I had to keep my wits about me the whole time. But it was a great learning experience and I fully intend to make the most of the lessons learnt in my future campaign work.

Hideyuki Ban (CNIC Co-Director)

1. The doubling time of a breeder reactor is the operating time required to produce excess fissile material equal to the initial quantity in the fuel cycle, i.e., inside and outside the reactor. (Nuclear Reactor Engineering, Third Edition, Glasstone and Sesonske, 1981)



# The birth of Japan Atomic Energy Agency

On October 1st, a new research and development agency, Japan Atomic Energy Agency (JAEA), was established. It was established in the name of administrative reform, which aims to promote rationalization and cost reduction of government agencies through integration. So although it is a 'new' agency, in fact it was created by merging two existing agencies, namely Japan Atomic Energy Research Institute (JAERI) and Japan Nuclear Cycle Development Institute (JNC).

JAERI was established in 1956. It was an R&D agency and, as the name suggests, it focused on research. JNC, on the other hand, focused on development. It was established in 1956, the same year that JAERI was established, under the name of Atomic Fuel Corporation (AFC). AFC was reorganized and re-established as Power Reactor and Nuclear Fuel Development Corporation (PNC) in 1967, then later was renamed as JNC in 1998. It was renamed in response to public criticism of the accidents and cover-ups at the Monju Prototype Fast Breeder Reactor in 1995 and the Asphalt Bituminization Treatment Facility at Tokai Reprocessing Plant in 1998. While PNC was assigned the additional role of developing new models of reactors (FBR and ATR), the establishment of JNC was literally a name change.

Originally, PNC was established because the ruling Liberal Democratic Party disliked the persistent conflict between the board of directors and the union of JAERI. It therefore decided to transfer the development of new-type reactors to another agency and ever since it has been said that the 'research-oriented JAERI' and 'business-oriented PNC' are like oil and water. JAEA is an attempt to mix oil and water, so one can foresee many troubles ahead.

Nevertheless, with the launching of JAEA, a giant nuclear R&D agency came into being. Progressive cost reduction is expected, but at the time of establishment, it had a staff of around 4,400 and an annual budget of 200 billion yen. Furthermore, it had an accumulated deficit of approximately 4,400 billion yen. JAEA's found-

Cartoon by  
Shoji Takagi



ing chairman, Yuichi Tonozuka, (formerly chairman of JNC) declared a goal of becoming "the world's best R&D agency".

According to comments that Mr. Tonozuka made during interviews, JAEA will focus on four areas: FBR, disposal of high-level radioactive waste, J-PARC (Japan Proton Accelerator Research Complex - a joint research project with High Energy Accelerator Research Organization), and nuclear fusion. The first two were inherited from JNC and the latter two from JAERI. Activities in these areas center on the construction of large-scale facilities. No reference is made to research on nuclear safety, which was the responsibility of JAERI. As for the naming of JAEA, it is the first time that the term 'Agency', usually used for administrative organizations, has been used for an R&D organization.

With the establishment of JAEA, it is feared that research on nuclear safety will be more neglected than ever. There is also the issue of safety review. Up to now a substantial number of JNC and JAERI staff members were involved in safety review of nuclear facilities. JNC facilities were reviewed by JAERI staff, while JAERI facilities were reviewed by JNC staff. Although there were some criticisms, this cross-reviewing ensured a certain degree of neutrality. There is a great sense of uncertainty as to how JAEA will develop a framework to ensure neutrality in future.

by Baku Nishio (CNIC Co-Director)

## Management of cosmic ray exposure to aircraft crew

**O**n November 1st, the Ministry of Education, Culture, Sports, Science and Technology compiled a report entitled "Investigation into Cosmic Ray Exposure to Aircraft Crew (tentative title)". The purpose of this report was to reveal the situation of cosmic ray exposure to aircraft crew and develop a basic approach to the issue.

Last June, an investigative working group was formed within the Radiation Safety Regulations Investigative Committee (our translation), made up of experts in the fields of radiological protection, cosmic ray research, and radiation measurement. Explanations were provided by the Japan Aerospace Exploration Agency, the Japan Health Physics Society, the International Commission on Radiological Protection (ICRP), and representatives from foreign industries. Opinions on the situation of aircraft crew were heard from the Scheduled Airlines Association of Japan (SAAJ) and the Airline Pilots' Association of Japan.

Aircraft crew persons frequently work on aircraft which fly at high altitudes and high latitudes, making their radiation exposure from cosmic rays far greater than that of the average person. ICRC 1990 Yearly Report called for treating cosmic ray exposure of aircraft crew as occupational exposure. According to ICRP Publication 75, the dosage rate from cosmic rays at an altitude of 8,000m is approximately 3 micro-Sievert/hour and at an altitude of 12,000m it is approximately 5 micro-Sv/hr. In that case, if a person works for 200 hours a year on a jet which flies at an altitude of 12,000m, his or her radiation exposure to cosmic rays would total approximately 1 milli-Sv. Working regulations for Japanese domestic enterprises are set which limit maximum yearly working hours to 900-960 hours. Thus, actual yearly radiation exposure would be approximately 5 milli-Sv. This is approximately five times the yearly external radiation exposure to members of the general population. According to SAAJ, the average length of employment for domestic aircraft crew

is 10-13 years. When coupled with the fact that radiation exposure would increase even further if large-scale solar flares were encountered during flights, it is estimated that the lifetime radiation exposure of aircraft crew is much higher, even when compared to that of the average nuclear power plant worker, or worker in other fields related to radiation. However, cosmic ray radiation exposure of aircraft crew has yet to be designated as occupational exposure in Japan.

Although this report concluded that there is no need to regulate cosmic ray exposure of aircraft crew by law, it did call for enterprises to voluntarily manage the exposure dosage of crew and to conduct educational activities related to cosmic ray radiation exposure. Specifically, it suggested that the following measures were appropriate:

- Enterprises should calculate each crew person's exposure dosage and enable each person to freely view his or her exposure status;
- Results should be recorded and preserved;
- Topics on cosmic ray exposure should be included in educational programs at the workplace;
- In particular, women crew persons should be informed of the effects of radiation on a fetus;
- Health education and health consultations by medical doctors from the industry should be conducted.

Further, regarding the health management of aircraft crew, the report stated that medical checks currently being conducted were sufficient and that there was no need for new medical checks. Regarding damage to health thought to be caused by exposure to cosmic rays, such as cancer, the report concluded that sex, age, socioeconomic conditions, and lifestyles were major factors, and did not go as far as to clearly acknowledge the effects of cosmic rays.

However, a mere approximate calculation of radiation exposure, or management of flight duties cannot address the problems of suddenly occurring large-scale solar flares, nor the radiation exposure to the embryo

*Continued on page 2*

# Plutonium inventory: 2004 data and future projections

Each year the Japanese government releases data on the previous year's plutonium inventory. Figures showing the status of the inventory at the end of the 2004 calendar year have now been released (see table 1).

As can be seen, Japan's plutonium inventory continues to grow and projections (see table 2) made by the Institute for Science and International Security (ISIS) show that Japan is likely to maintain significant inventories of surplus plutonium well into the future (*Global Stocks of Nuclear Explosive Materials*, Chapter IV, "Separated Civil Plutonium Inventories: Current Status and Future Directions", by David Albright and Kimberly Kramer, June 10, 2005, Revised July 8, 2005). ISIS's projections relate to the following five cases:

*Case 1 (optimistic, full operation of Rokkasho):* First 2 reactors loaded with MOX in 2008, 2 more in 2009, 8 loaded by 2010, 18 by 2012 including Ohma, Monju starts in 2008, maximum plutonium loaded each year is about 9 tonnes.

*Case 2:* 2 year delay on Case 1 loading schedule, otherwise the same.

*Case 3:* 4 year delay on Case 1 loading schedule, otherwise the same.

*Case 4:* Based on Case 1, but the plutonium stored in Europe (estimated to be almost 50 tonnes after all overseas reprocessing contracts completed) is used first. Due to the licensing limit of 30 tonnes on unir-

Five Cases	2010	2015	2020
Case 1 - Optimistic	59	59	50
Case 2 - 2 year delay	63	75	68
Case 3 - 4 year delay	64	91	86
Case 4 - Overseas first	51	24	15
Case 5 - No MOX use	64	78	78

radiated plutonium that can be stored at Rokkasho<sup>1</sup>, reprocessing at Rokkasho is limited to 2 tonnes per year for about 7 years. Need 60-100 tonnes per year of MOX fuel to be fabricated from plutonium stored in Europe (fabricated in Europe or in Japan).

*Case 5:* No MOX used, but Rokkasho separates plutonium until the 30 tonne storage limit reached.

Plutonium inventory estimates for Cases 1, 2 & 3 remain relatively high because supply and demand are about equal after 2010 (about 7 tonnes per year separated and 7-9 tonnes loaded into reactors).

ISIS's projections are based on various assumptions. At this point in time it is impossible to speak with any certainty about Japan's future reprocessing and plutonium use programs, but CNIC believes that ISIS's projections represent a plausible range of possible outcomes.

Philip White (NIT Editor)

1. Presumably this refers to the 60-tonne limit specified in the license application for uranium and plutonium mixed oxide. Since this is mixed 50-50, it represents a 30-tonne limit for plutonium.

		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>Separated plutonium held in Japan</b>												
Tokai Reprocessing Plant	plutonium nitrate	710	597	384	385	384	375	365	539	545	478	562
	plutonium oxide	126	156	217	153	154	154	217	303	260	218	275
	Total	836	753	602	538	537	528	582	842	806	695	837
	Total Fissile Plutonium									551	474	569
MOX Fuel Fabrication Plant	plutonium oxide	2,032	1,980	2,346	2,553	2,737	2,652	2,515	2,323	2,530	2,465	2,442
	testing and fabrication stage	948	985	786	726	473	481	539	551	506	739	686
	fabricated fuel	38	181	411	370	386	358	360	420	308	331	433
	Total	3,018	3,146	3,543	3,649	3,596	3,491	3,413	3,294	3,344	3,536	3,562
	Total Fissile Plutonium									2,358	2,488	2,499
In Nuclear Reactors	Joyo	6	31	48	23	2	38	18	64	29	18	85
	Monju	15	367	367	367	367	367	367	367	367	367	367
	Fugen	53	0	43	0	34	0	0	0	0	0	0
	power reactors in use						465	465	670	416	415	415
	research & development	425	425	429	429	429	428	440	444	445	445	445
	Total	498	823	887	819	832	1,298	1,290	1,546	1,256	1,244	1,311
Total Fissile Plutonium									936	928	976	
Total						4,965	5,318	5,285	5,681	5,405	5,475	5,710
Total Fissile Plutonium									3,844	3,889	4,045	
<b>Separated plutonium held overseas</b>												
Overseas Stockpile	UK	1,412	1,418	2,437	3,549	6,109	6,957	10,118	10,713	11,640	13,614	15,897
	France	7,308	9,960	12,653	15,534	18,290	20,639	21,953	21,666	21,611	21,554	21,503
Total	8,720	11,377	15,090	19,083	24,398	27,596	32,070	32,379	33,251	35,168	37,400	
Total Fissile Plutonium									22,554	23,838	25,285	
<b>Total separated plutonium (sum of Japan and overseas subtotals*)</b>		13,072	16,099	20,122	24,089	29,363	32,914	37,355	38,060	38,656	40,643	43,110

## South Korean nuclear waste dump vote

In South Korea on November 2nd, regional voting was held on a final disposal site for low- and intermediate-level radioactive waste. I visited South Korea during the voting campaign to attend a citizens' symposium from October 12th - 17th.

### Stalled 20-year search

In South Korea the government has responsibility for selecting a site for the management and disposal of radioactive waste. Korea Hydro & Nuclear Power Company (KHNP), which operates Korea's nuclear power plants, is also required to promote the radioactive waste management project. The original plan was to select a site for the final disposal of all low- and intermediate-level waste (L&ILW), including radioactive isotopes (final capacity of 800,000 x 200 liter drums, scheduled to commence operations in 2008) and for the interim storage of high-level waste (HLW). Since South Korea does not have a reprocessing program, its HLW takes the form of spent nuclear fuel.

Effectively, all of South Korea's radioactive waste would have been concentrated in this one site and there was a strong possibility that it would also have become the final disposal site for spent fuel. For this reason, over the last twenty years the same process has been repeated several times. First there was a call for interested sites, followed by the selection of a site by state coercion. Fierce opposition from local citizens ensued, leading to the decision being overturned. As in the case of the 2003-04 protest campaign in Buan in the west of the country, the selection process was stalled each time as a result of strong citizens' action against the nuclear waste dump.

### Four local governments volunteer

After the Buan fiasco, the government came up with one inducement after another to lure candidate sites. The major new policies are as follows: 1) separation of the L&ILW final

disposal site from the spent fuel interim storage site; 2) regulation to ban construction of a spent fuel facility on the same site as the L&ILW site; 3) a special subsidy (around 300 billion Wons); 4) payments for receipt of waste shipments (5-10 billion Wons); 5) relocation of the head office of KHNP; 6) a special regional development system; 7) obligation to hold a regional vote as part of the selection process; 8) construction of a proton accelerator facility.

In addition, the following site selection procedures were adopted: 1) establishment of a site selection committee to assess the suitability of proposed sites; 2) application by the mayor after agreement from the local council; 3) applications to close in August 2005 and voting to be held in October; 4) selection of the candidate site with the highest percentage of citizens voting in favor. Through this process regional votes were held for candidate sites in four municipalities: Gyeongju, Gunsan, Yeongdeok and Pohang.

### Regional development: the case of Rokkasho

The mayors and the local councilors are under the illusion that the 300 billion Wons will promote regional development. Japan's Rokkasho Village was trumpeted as a success story of another nuclear regional development scheme. I was invited by Korean Federation for Environment Movement (KFEM) to respond to this and, along with Erin Rogers from Texas, participated in symposia at all the four candidate sites. I told the audiences that Rokkasho Village and Aomori Prefecture are anything but regional development success stories. There has been price dumping of squid from Rokkasho, and Rokkasho's agricultural products are sold by concealing where they are produced. I also told them how the damage from radioactivity will increase when the Rokkasho Reprocessing Plant commences operations. Erin Rogers gave examples of how radioactivity is already leaking from many



places at waste dumps in the US. We pointed out that there are no examples anywhere in the world of nuclear facilities leading to successful regional development.

**Irregularities and illegalities**

Incredible irregularities and illegalities occurred during the voting campaign, which began on October 1st. The promoters of the dump drafted large numbers of public servants and local officials to promote the dump in their region, so as to achieve the required voter turnout (one third of eligible voters) and obtain a majority in favor. They tried to maximize the absentee vote in favor by submitting absentee voter applications on behalf of other people. Absentee voting forms were piled up in bins and on sofas at the local government office, without ever being sent to the voters. On the day of the vote, local government employees told people to vote in favor. In Yeongdeok, where 60% of eligible voters are over 60 years old, aged and disabled people claimed that public servants accompanied them to the voting booth and told them to vote in favor of the dump. In all the regions where votes were held there were reports of irregularities and illegal activities, such as vote buying. There were areas where the absentee vote exceeded 50% of the overall voter turnout. The extent of irregularities and illegal practices was unprecedented in the 60 years since the end of the Japanese occupation.

The results of the vote were as follows:

- Gyeongju - 70.8% voter turnout, 89.5% in favor;
- Gunsan - 70.2% voter turnout, 84.4% in favor;
- Yeongdeok - 80.2% voter turnout, 79.3% in favor; and
- Pohang - 47.7% voter turnout, 67.5% in favor.

On this basis, the South Korean government announced that it would proceed with preparations to make Gyeongju the site of the dump. However, the reality is that the government and KHNP used their power and money to induce the local governments and their citizens to

accept the dump. The South Korean democracy movement has indicated that it does not accept the result of this forced, undemocratic selection process and says it will continue to fight the dump.

Masako Sawai (CNIC)



**Anti-Nuclear Who's Who:****Koshiro Ishimaru: always leading from the front**

by Kiyoshi Teranishi\*

**W**orkers employed in periodic inspections and maintenance of nuclear power plants (NPP) are forced to work in hot, cramped, radioactive places. Their peace of mind and their health suffer because of exposure to radiation. The working conditions of subcontractor workers are particularly harsh and injuries are common.

From very early on Koshiro Ishimaru began to conduct surveys of radiation exposure of subcontractor workers at Japanese NPPs and to push for support for these people.

In August 1972, 17 months after Tokyo Electric Power Company's (TEPCO) Fukushima I No. 1 reactor commenced operations, the Futaba Anti-Nuclear Energy Alliance was formed. The core members were workers in the Futaba area, home to the Fukushima I NPP. Koshiro Ishimaru played a central role in the formation of the alliance. He was actively involved in exposing cover-ups and environmental pollution and in supporting subcontractor workers. Each day when periodic inspections were being conducted at the Fukushima NPP, thousands of subcontractor workers would be ferried by microbus to the gate, among them farmers from the surrounding area and people who had lost their jobs at the Joban Coal Mine. He saw them entering the plant and heard that they suffered health problems because of the large exposures to radiation they received while fixing broken parts and cleaning up after accidents, so he decided to focus on helping these people.

In the May following the 1979 Three Mile Island accident he set up a 'post box' and a 'safe house' for nuclear subcontractor workers and the alliance became fully involved in providing support for these people.

The first legal case for damages for radiation exposure to a subcontractor worker was the Kazuyuki Iwasa case. It was fought in the Kansai region. The scientists and researchers group supporting this case visited Ishimaru, along with Dr. Murata (see NIT 96 Who's Who) and a nurse of the Hannan Central Hospital. This led to them cooperating on the survey of radiation exposure of subcontractor workers at the Fukushima NPP. Ishimaru went from door to door visiting workers whom he had previously interviewed. With a medical

examination survey developed with Dr. Murata's group, he carried out a detailed survey of radiation exposure and was also able to arrange for Dr. Murata to examine workers. He visited remote houses in the snow-



covered mountains, dimly lit coal miners' terrace houses and the apartments of the Keihin District, the workers' town of the so-called 'nuclear gypsies'. Always Ishimaru led from the front, carrying on the surveys. Ten years later, in 1989, in cooperation with the scientists and researchers group, the Futaba Anti-Nuclear Energy Alliance published the results of their work as 'Data: The real situation of worker radiation exposure at the Fukushima Nuclear Power Plant'.

One subcontractor worker gave the following account. "I went in three times. When I came out the first time, I was asked to go back in. When I came out again, I was asked to go back in again. In the end I had a reading of 176." Thus, 17% of surveyed workers exceeded the allowed daily dose for those days of 100 milli-rem. The survey showed that subcontractor workers received no compensation when they got cancer, or fell ill with other diseases because of radiation exposure. If they became ill, they were fired. Nothing was said about what happened to them. It was all shrouded in secrecy. Ishimaru's survey work was taken up in the film 'Vanishing Tomorrows', which appeared in the 1989 International Leipzig Festival for Documentary and Animated Film.

Ishimaru is still continuing his activism, opposing TEPCO's dangerous pluthermal program for Fukushima NPP. At the same time, he also continues to support nuclear industry workers and he helped to win workers' compensation for Mitsuaki Nagao for his multiple myeloma (NIT 99).

\*Kiyoshi Teranishi is a scientist who worked with Koshiro Ishimaru on the worker exposure surveys.

# NEWS WATCH

## Japan and internationalization of the nuclear fuel cycle

An agency of the Ministry for Economics Trade and Industry held a meeting on October 25th to discuss how Japan might cooperate with proposals to internationalize the nuclear fuel cycle. Among the options considered were the possibility of enriching uranium and reprocessing spent nuclear fuel for other countries.

Previously the Japanese government had not been supportive of proposals to internationalize the nuclear fuel cycle. It was afraid of restrictions being placed on the Rokkasho Reprocessing Plant (RRP). A proposal made by Mohamed ElBaradei, Director General of the International Atomic Energy Agency, included a call for a moratorium on such facilities. However, now the government is concerned that if it does not make a concrete proposal of its own, it might end up being lumped with all the other non-nuclear weapon states and be subject to the same restrictions as them in regard to uranium enrichment and reprocessing.

The government's recent expression of interest in internationalizing the fuel cycle is an attempt to deflect criticisms that RRP will have a negative impact on the nuclear non-proliferation regime. The cynicism of the move is obvious, because Japan will not have the capacity to enrich uranium or reprocess spent fuel for other countries for the foreseeable future. The uranium enrichment plant in Rokkasho has been plagued by problems and is now only able to meet 10% of Japan's own needs. Extensions are planned, with a suggested start-up date of 2010, but nothing concrete has emerged so far. As for RRP, at most it will be able to reprocess only 80% of the spent fuel from Japan's own

nuclear power plants. The government has in mind a second reprocessing plant, which might also be able to reprocess foreign spent fuel. However, no mention was made of a second reprocessing plant in the new nuclear energy policy adopted by the government on October 14th. If a second plant is to be built, planning won't begin until 2010 and it is unlikely to be operational until decades hence.

## Uranium contaminated soil shipped to US

On October 3rd the newly formed Japan Atomic Energy Agency (JAEA) shipped 290 cubic meters of uranium contaminated soil (left at Ningyo Toge after uranium mining operations in the 50s and 60s) to Seattle (see NIT 107). From there it was transported by truck to International Uranium Corp.'s (IUC) White Mesa uranium mill in Utah.

By redefining the soil as 'uranium ore', a radioactive waste headache for JAEA was transformed into a money spinner for IUC. Not that there will be any profits from the sale of the milled uranium. The ore grade is a mere 0.03% and at current prices the small quantity of uranium extracted would only fetch about \$10,000. This money must then be refunded to JAEA. Rather, IUC's profits will come from the fee it is charging for sample analysis and milling. Although the figure is not public, the total cost to JAEA for this operation is believed to be around 660 million yen.

As predicted, there was considerable opposition from Utah residents when they found out that they were the unlucky recipients. The White Mesa mill is located on Indian land and local Indians immediately expressed their opposition, citing the decades of havoc wreaked on their communities by uranium mining and milling.

The Utah government has previously claimed that IUC's operations were 'sham disposal'. Now the people of Utah are concerned that their state is becoming a dumping ground for uranium waste from around the world. For their sake, we hope that the publicity generated by this case will arrest the trend. Which leaves the question of what will be done with the rest of JAEA's uranium contaminated soil.

### **Projects for ITER-related facilities decided**

On June 28th Cadarache in France was selected as the site for the international thermonuclear experimental reactor (ITER). At the same time it was decided that related facilities would be built in Japan. On October 12th, the governor of Aomori Prefecture announced that he would accept facilities at Rokkasho Village. The Ministry of Education, Culture, Sports, Science and Technology (MEXT), which has been examining what kind of facilities will be built, has chosen three candidate projects and sites and is expected to make an official proposal to the EU in the near future.

The three candidate projects and sites are as follows: (1) an international thermonuclear energy research center (Rokkasho, Aomori Prefecture), which will be composed of a research and development coordination center, an ITER remote experimental center and a thermonuclear computation center; (2) a satellite Tokamak (Naka City, Ibaraki Prefecture): modification of JAEA Tokamak-60 (JT-60); and (3) engineering design activities for international thermonuclear material irradiation facilities (Rokkasho): this would be implemented only when participation in irradiation experiments is secured, as

there is a possibility that the facility itself will be built in another country.

### **Agreement for Spent Fuel Interim**

#### **Storage Facility signed**

Tokyo Electric Power Co. Ltd. (TEPCO) and Japan Atomic Power Co., Ltd. (JAPC) plan to jointly construct a spent fuel interim storage facility in Mutsu City, Aomori Prefecture. Mutsu City has been very positive about the facility, but Aomori Prefecture had adopted a more cautious attitude. However, Aomori governor, Shingo Mimura, held a press conference on October 19th and officially announced that he would accept the facility. He indicated that he had confirmed in a series of meetings with the government and power company officials that the spent fuel would definitely be removed from the intermediate storage facility. On the same day a site agreement was signed by the four parties involved: Aomori Prefecture, Mutsu City, TEPCO and JAPC. The agreement contains a promise that after a 50-year period of intermediate storage the spent fuel will be removed.

According to the agreement, the capacity of the storage facility is 5,000 tonU. It is scheduled to start operation in 2010.

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