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# NUKE INFO

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Citizens' Nuclear Information Center

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## Superphenix Shock Rocks Japan's Nuclear Community



French Fast-Breeder Reactor Superphenix

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On the morning of 20 June, just several hours after the news of the French decision to finally scrap the demonstration fast breeder reactor Superphenix reached Japan and shook Japan's nuclear community, Riichiro Chikaoka the Minister of the Science and Technology Agency (STA) and head of Japan's Atomic Energy Commission (JAEC), issued a press release entitled "On the Promotion of the Nuclear Fuel Cycle."

In the statement, he admitted that the sodium leakage at the FBR Monju in December 1995

and the fire/explosion accident at the Tokai Reprocessing Plant had aroused nationwide concern over the safety of nuclear facilities, and had had a significant adverse influence on the promotion of Japan's nuclear fuel cycle program. Nonetheless, he asserted that the importance of the nuclear fuel cycle program could not be exaggerated if Japan should proceed with its nuclear power generation program in a stable manner. He then emphasized that there would be no change of government policy in promoting the construction of Rokkasho Reprocessing Plant, MOX use in light water reactors, and strengthened measures for spent fuel storage/management (back-end policy).

It is interesting to note that he did not mention the French decision at all, although his statement was apparently aimed at mitigating the shock dealt by the collapse of the Superphenix program to the nuclear community and local governments involved in the Japanese plutonium program. This implies, contrary to his words, that JAEC and STA were really deeply shocked by the news and could not comment at all on the French decision.

Also interesting is that the three items Chikaoka stressed, Rokkasho reprocessing, MOX, and spent fuel storage are precisely those controversial subjects over which the government has run into

trouble, even with pro-nuclear local governments, and is fast approaching a deadlock.

After some 10 days of silence from the pro-nuclear community, the *Denki Shimbun* (Electricity Newspaper) first addressed the topic in its 1 July issue, commenting as follows:

"The discussions now under way in the JAEC's Advisory Panel on FBR are not clear. JAEC's original justification for FBR was that plutonium breeding was vital for a natural resource-poor country like Japan. This is questionable after the French decision, since France is equally resource-poor. JAEC needs to make clear anew why Japan needs an FBR program."

In the same issue of *Denki Shimbun*, Atsuyuki Suzuki, professor of Tokyo University and one of the central pro-plutonium figures, commented to the effect that Japan should not withdraw from FBR development, but readjust its current program substantially since it was taking up too much time and money.

All in all, it now seems that the nuclear industry feels it necessary to review JAEC's FBR program, but is still at a total loss as to how to proceed with the review process.

(by Jinzaburo Takagi)

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## Japan's Nuclear Fuel Cycle, the Last Ditch Fight

In Aomori Prefecture, where the Rokkasho Reprocessing Plant is located, people were shocked to hear of the accident at the Tokai bituminization plant of the Power Reactor and Nuclear Fuel Development Co. (PNC). In addition to the issue of excess plutonium, the accident at the Tokai plant which was expected to transfer its technology to the Rokkasho facilities, has increased the feeling of distrust toward Japan's reprocessing technology.

Electric power companies close to completing the transportation of spent fuel to overseas reprocessors under the current contracts, are now operating nuclear reactors on the premise that in the future, the spent fuel will basically be sent to the water pool at Rokkasho Reprocessing Plants. But although the water pool has been completed, the completion of the reprocessing plant itself will not be seen until many years ahead. For the people of

Aomori, the decision to push ahead with the transfer of spent fuel, or nuclear waste, to Rokkasho when the outlook for reprocessing itself is still vague, poses an even greater concern that Aomori will eventually become Japan's "nuclear waste dump."

In response to such concern, the Atomic Energy Commission on 20 June publicized the Commission Chief's comment that it will continue to maintain its current nuclear fuel cycle policy. (see article above).

Because of the Tokai accident, Japan Nuclear Fuel Ltd., which operates the Rokkasho Plant, and Aomori Prefecture have not been able to conclude the safety agreement which would give the green light to begin accepting spent nuclear fuel at Rokkasho. Although they had initially hoped to begin accepting spent fuel at Rokkasho in June, that has now been tentatively postponed to October.

## PNC Reform Poses Greater Conservatism

In the midst of increasing criticism toward Power Reactor and Nuclear Fuel Development Co. (PNC), the Science and Technology Agency (STA) set up the PNC Reform Committee and had been debating on how best to reform PNC. On 30 July, the committee submitted its final report on the reform plan. When the committee was launched, STA had stated its recognition that there was a need for "thorough examination of the plan by a third party, in order to conduct drastic reform." Unfortunately, the final report of the reform is far from anything "drastic," nor does it present any kind of "reform."

Briefly, the report states that because development of big projects require a huge amount of money, the government will set up a new quasi-governmental corporation that will handle only those projects which are considered too expensive for private firms to develop. According to the committee, the main projects that are expected to be undertaken by the new corporation are the development of a fast breeder reactor (FBR) including reprocessing of mixed oxide fuel (MOX), and development of technology for disposing of high-level radioactive waste.

As for the reason why PNC tried to cover up the Tokai accident, although it seemed they had learned their lesson from the previous Monju accident, the committee blamed the structure of PNC as an organization, within which vertical communication from the top down is emphasized, but horizontal communication between sections dealing with different projects is scarce. The committee therefore suggests the new corporation will concentrate on promoting closer communication between sections, including between individual personnel, and giving the Chairman greater authority.

Yet on the other hand, the committee urges STA to strengthen its supervisory system pointing out the fact that it failed to give proper supervision and instruction to PNC, a further factor leading to PNC's cover-up of the Monju accident. Here, the problem in the committee's suggestion is already obvious: to delegate greater authority to the Chairman of the new corporation, and to strengthen STA's supervising system appear to contradict each other, raising the question of whether or not the government will really have control over the new corporation.

With respect to financial spending, the draft does not offer any assurance that the spending

will be lowered significantly. Considering the budget for fiscal 1997, the amount of government spending expected to be eliminated as a result of the reform amounts only to a little over 10 percent. Furthermore, projects and research that require more money will all be handed over to the new corporation. If STA really believes many people will agree to their plutonium policy as long as they form a new corporation to take the place of PNC, they are nothing but fools.

## Gov't Policy Remains the Same

The most disappointing factor about the report is that it stresses the necessity of maintaining Japan's nuclear fuel cycle/plutonium policy without holding any discussions in the committee. But in view of the growing public concerns after the two PNC accidents, "reform" of the nuclear fuel cycle policy itself should have been the main issue to be addressed in the committee.

The most controversial argument was the report's recommendation that FBR development should remain the core project. On this special FBR program, another government panel, the advisory Panel on Fast Breeder Reactor, which was set up as a result of discussions in the 1996 Nuclear Energy Round Table, is currently reviewing the whole program.

The PNC Reform Committee organized by STA completely ignored the on-going discussions in the FBR panel, but rather stated in a clear manner that it wanted to influence the conclusions of the panel in favor of retaining the whole STA nuclear fuel cycle policy. It is obvious that the controversial "final report" of the PNC Reform Committee cannot put an end to the so-called reform issue, but will contribute to raising public distrusts toward PNC and STA even further.

## CGEMA Final Report Released

The final report of CNIC-organized Committee for General Evaluation of Monju Accident (CGEMA) was published on 22 July. The publication was timely, since the report recommended a complete review of Japan's plutonium program instead of just reforming the organization. Details will be covered in the next issue of NIT.

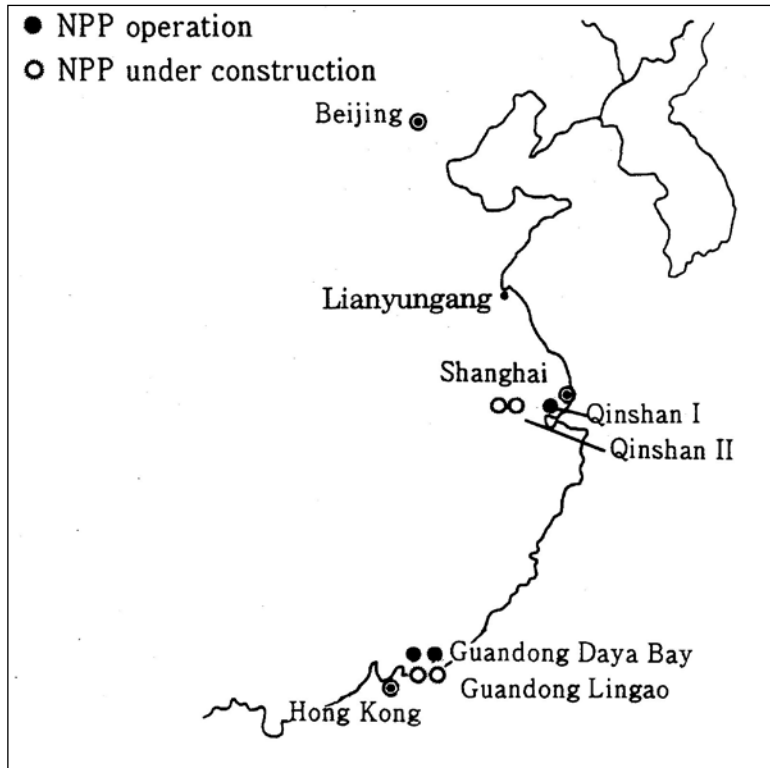
(J. Takagi, H. Ban, M. Sawai)

# Nuclear Power Developments in Asia

## CHINA, TAIWAN, AND KOREAN PENINSULA

### People's Republic of China

-Attempt to Become a Nuclear Giant



1,2 (PWRs 984 MW each) - all of which began commercial operation in 1994. Their combined total output is 2268 MW. Qinshan I-1 was claimed to have been constructed through "independent development," but it is merely a combination of technologies imported from foreign countries, its design having been copied from a reactor developed by US WH Co., and using machinery imported from Japan, Germany, and Sweden, though some elements were made in China.

Guandong Daya Bay-1 was imported from Framatome of France, and Guandong

In the three-year period from 1994 to 1996, there were only a total of seven orders worldwide for nuclear power reactors - two orders each by Korea, China, and Taiwan, and one by Japan. There were absolutely no orders by the European countries and U.S. Because of this trend, it is believed that the center of nuclear power plant construction has now shifted to Asia. Among the Asian countries, China has become the most prominent in regard to the size of the future construction plan, aiming to build enough nuclear power plants to generate 150GW by 2030.

As of June 1997, there were three nuclear reactors in operation in China - Qinshan I-1 (PWR 300MW), and Guandong Daya Bay-

Daya Bay-2 was imported from General Electric Co. of England. For both reactors, Electricite de France provided technological assistance from design to operation. In addition to the three operating reactors, there are four reactors currently under construction. These are, Qinshan II-1,2 (PWRs 600MW each), which have been "developed independently," and Guandong Lingao-1,2 (PWRs 1000MW each), which are being developed under a contract with a Framatome-GEC-EDF consortium, similar to Daya Bay.

Reactors currently in the planning stages are: Qinshan III- 1,2 (CANDUs 700MW each),

Guandong Lingao-3,4 (PWRs 1000MW each), and Lianyungang-1,2,3,4,5,6 (PWRs 1000MW each). The Qinshan reactors will not be developed independently but will be imported from Canada. Lianyungang reactors will be imported from Russia. All of these reactors will include parts imported from Japan.

China is also an exporter of nuclear power plants. In addition to its export of test reactors to Algeria and Iran, it is now constructing a 325MW PWR in Pakistan. They have also reached an agreement to construct the No.2 reactor of this nuclear power plant, Chasunupp (Chashma Nuclear Power Plant). In 1993, a contract was also signed with Iran to export two PWRs with the same capacity as the Pakistani Chasunupp reactor.

One thing that has drawn public concern is the fact that all the countries that are importing nuclear reactors and technologies from China are those that are being suspected of manufacturing nuclear weapons. For example, it is suspected of exporting uranium enrichment technology and the necessary instruments to

Pakistan.

China also seems eager to develop a fast breeder reactor. It will begin construction of a 20MW test reactor this fall, aiming to start generating electricity in 2003. The plan is to build a reactor near the Institute of Atomic Energy located 40km from Beijing.

The key to China's success in developing these projects is the financial situation. For importation, they usually depend on loans received from the exporting country, but naturally, these loans will eventually have to be repaid. Considering the fact that the nation has been able to collect less than one-third of the cost of generating electricity through electricity bills, the financial situation is a real bottleneck.

Furthermore, the future of Chinese nuclear power program also depends on the nation's democratization. Though anti-nuke movements have not yet surfaced, some leaders appear to be calling for the need to improve the efficiency and electric transmission ability of thermal power plant before leaning heavily toward nuclear power development. (Baku Nishio)

## Taiwan

### -Uncertainty over 4th NPP and Fear Against Proliferation Raised

In Taiwan, a total of six nuclear power reactors are currently in operation. Details are as follows; Chinshan 1, which has been in operation since '78 and Chinshan 2 since '79, are located at the first nuclear power plant site (BWRs 636MW each), Kuosheng 1 since '81 and Kuosheng 2 since '83 at the second plant site (BWRs 985MW each), and Maanshan 1 since '84 and Maanshan 2 since '85 at the third plant site (PWRs 951MW each).

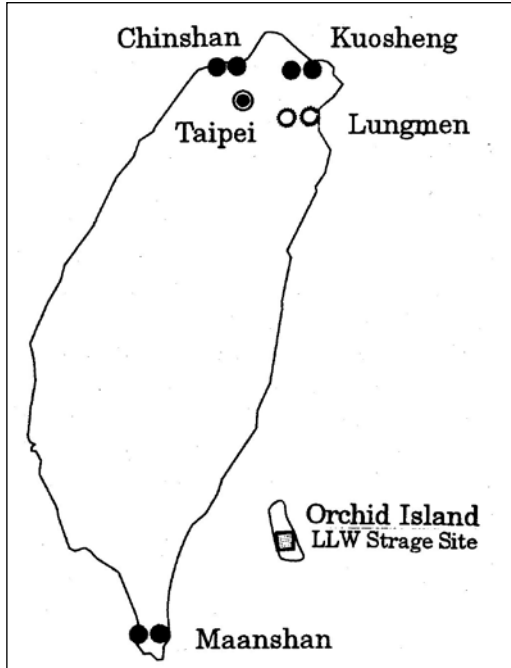
The fourth nuclear power plant site is called Lungmen, for which the construction plan in northeast Taiwan was laid out in 1980. Later, because of the rise of anti-nuclear power plant activities and the Chernobyl accident, the plan itself was dropped. However, Taipower unexpectedly announced an international tender for Lungmen in '93, and since then there has been strong competition for the contract in the nuclear industry.

Meanwhile, anti-nuke activities have

strengthened, and two referendums, one at the construction area in '94 and another in Taipei in '96, were carried out with victories for the "NO" campaigns in both votes.

In the international tender in '95, the US, UK, and France bids were all higher than Taipower had expected, and no contract was signed. However, a successful bid was made by GE Co. of U.S. at the re-tender in May '96. This time the Taiwanese Parliament decided to reject the proposed construction of Lungmen, but this rejection was vetoed in turn by the president of Taiwan. On October 18th 1996, the construction plan was reconsidered and adopted by the Taiwanese Parliament (See Nuke Info Tokyo No.56).

Following this decision, Toshiba and Hitachi Cos. of Japan and GE Co. announced an export plan for the main nuclear power plant equipment, this being the first time Japanese corporations made plans to send



nuclear power plant's main component overseas. The exported plants will be two ABWRs of 1350MW each, developed by Toshiba-Hitachi-TEPCO with GE. These are the same plants now operating as Kashiwazaki-Kariwa 6,7 in Niigata, Japan. However these plants have already experienced a series of accidents, such as fuel rod damage, and steam leakage, giving the image that these ABWRs are still at an experimental stage. In addition, the turbine will be exported by Mitsubishi.

Recently export of radioactive wastes

## Korean Peninsula

### - S. Korea Making Developments Amidst Growing Concern Over Earthquakes

In South Korea 12 nuclear reactors are in commercial operation (Kori 1-4, Yonggwang 1-4, Uljin 1-2, Wolsong 1-2). Among those reactors, Wolsong 2 is the latest one which began commercial operation on 1 April.

On 27 February of this year, however, 18 tons of heavy water was found to have leaked from a seam of the coolant purification system while this reactor was in test operation. 15 tons of heavy water was recovered, but the remaining 3 tons became vaporized and still remain inside the reactor containment. The company explains that since the reactor has

from Taiwan to North Korea has raised great concern. However, this proposed export is intended as a support plank for the construction of Lungmen, since it is likely that the pro-construction lobby will not be able to withstand pressure from anti-nuke activities without first solving the waste problems.

For the export of nuclear power equipments, the general principle calls for an agreement on cooperation between two countries concerning peaceful use of nuclear energy, to assure non-proliferation of nuclear weapons. However, this will not apply to Taiwan as there are no diplomatic relations, and also because Taiwan will not be a signatory to the non-proliferation treaty (NPT). Because Japanese corporations are not the main contractor for Lungmen, there is no assurance of the prevention of nuclear weapons development in Taiwan or a third country using equipment from Japan. Questions related to the above were asked by Masanori Goto, a lower-house member of the diet in Japan on 15 June 1997. The Japanese government presented a written response on 15 July that "the principle of an agreement for peaceful use of nuclear energy may not apply." For the export of nuclear power equipment to Taiwan, they say, "it is currently under investigation". The situation is simply that corporations conclude more and more contracts, and the Japanese government has no effective control measures.

(Mika Ohbayashi)

been in test operation for only 4 months, radioactive leakage caused by heavy water leakage is out of question.

It was announced that at Uljin 3, the building construction and installation of the instruments were completed. The water pressure test at room temperature took place successfully without nuclear fuel loaded. A test operation will soon begin and will be followed by the commercial operation scheduled for June 1998. This reactor will be a model for the so-called Korean LWR.

As for Wolsong reactors, people have

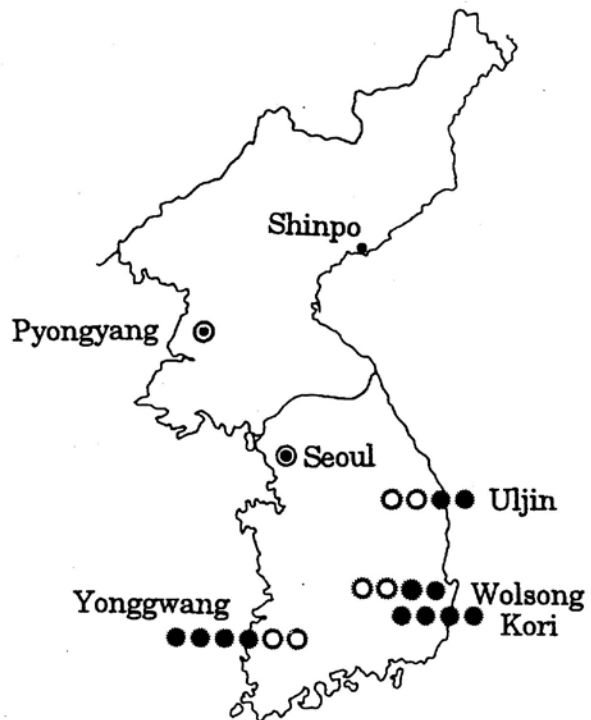
become concerned about the safety since the discovery of active faults under the site of the plants. It was revealed on 10 May that the Yang-san fault turned out to be active, according to a joint research conducted by Seoul University, Kyoto Univ., and Korea Teachers Univ. since June 1996. Furthermore, Korea Resources Research Institute announced that 10 km long Ipsil fault was found east of the Yang-san fault.

On 28 June, an earthquake with a shock level of 4 on Richter's scale shook the area between these two faults. The Wolsong reactors are situated 19 km from the epicenter and 12 km from Ipsil fault.

The report which had been made earlier by the Korea Resources Research Institute somehow leaked to the media. According to the report, there were as many as 55 earthquakes (a shock level of 3 on Richter's scale -12 times, a shock level of 2 -31 times, a shock level of 1 -12 times) between December 1995 and December 1996 in the vicinity of Yang-san fault. Of these earthquakes, 15 to 20 of them occurred within 20 km radius of the Wolsong reactors. Even Kori reactors which are a little further away from Wolsong were found to be located south of Ulsan fault that was a continuation of the Yang-san fault. The Korea Electric Power Company claimed that these reactors are safe since they were designed to withstand a shock level of 7 on Richter's scale.

On 17 February, Li Jong Hun, the president of Korea Electric Power Company met with journalists and announced that reprocessing of the spent fuel might be commissioned to either France or U.K. Dae Woo group is preparing to participate in the bidding for construction of nuclear power stations in Vietnam, while Korea Atomic Energy Research Institute sponsored 20 people from Thailand who took part in a study tour on nuclear power research and business.

Early this year, the proposed export of nuclear waste from Taiwan to North Korea



triggered big controversy. The North Korean government has not made any official comment, but environmental groups in South Korea as well as other countries have expressed strong opposition, which have irritated the Taiwan government. In May, the Minister of Foreign Affairs of China said they are willing to accept nuclear wastes from Taiwan. The Korean Minister of Foreign Affairs also commented on TV that they hope the Taiwan government will give up the export of nuclear waste to North Korea and accept the proposal made by the Chinese government.

As for the offer of LWR from South Korea to North Korea, 54 representatives from Korea Energy Development Organization (KEDO) visited South Korea in April and had a technical and working-level talks at Sinpo, the proposed location. The talks went smoothly, and land development is expected to start this summer.

(Kenichi Nishina)

## Significant Incidents at Nuclear Plants ( January to June 1996)

Date	Plant	Short Description of Events
5 Jan.	Takahama 1	Reactor manually shut down due to break of main feed water control valve rod.
14 Jan.	Ikata 3	Steam leakage due to malfunction of moisture separator steam relief valve during power drop operation for inspection outage.
20 Jan.	Hamaoka 3	Fire at miscellaneous solid waste storage facility in turbine building basement.
6 Feb.	Tokai I	Power fall due to failure of fuel replacing machine.
9 Feb.	Ohi 1	Reactor power reduced due to leak of sea water into secondary coolant circuit caused by hole in condenser tube.
23 Feb.	Kashiwazaki-Kariwa 1	Reactor manually shut down due to malfunction of internal pump.
28 Feb.	Oarai Eng. Center	Air compressor failed at solid waste pre-treatment facility.
11 Mar.	Mihama 3	Power reached 104 % of rated level due to excessive opening of steam regulator valve.
15 Mar.	Takahama 2	Reactor automatically shut down by activation of protective circuit due to operational error of power transformer.
18 Mar.	Mihama	Emergency diesel generator parts installation error discovered during test operation.
18 Apr.	JRR-2	Reactor manually shut down due to heavy water leak from secondary coolant piping.
24 Apr.	Onagawa 1	Reactor manually shut down due to nitrogen gas leak from pilot valve of main steam isolation valve.
8 May	Steady State Assembly	Steady State Assembly automatically shut down due to Critical operational error during start-up operation.
9 May	Takahama 1	Deformation found at driving rod of control rod drive mechanism during replacement vessel head and control rod drive mechanisms; deformation found all driving rods prepared for replacing.
14 May	Shika 1	Reactor manually shut down due to increased water leak from recirculation pump bearing seal.
20 May	Kashiwazaki-Kariwa	Fire at charcoal storehouse inside plant.
21 May	Ikata 2	Damage to 19 steam generator tubes found during periodic inspection.
13 Jun.	Fukushima I-4	Fire at auxiliary boiler room in reactor building basement.
20 Jun.	Kashiwazaki-Kariwa 3	Residual heat removal system pump manually shut down due to smoke rising from motor during test operation; reactor operation continued.
24 Jun.	JRR-2	Heavy water leak from water filtration piping found during pre-operating inspection.



## NEWS WATCH

### Plan of Ashihama NPP Enters Cooling-off Period

The construction plan for Ashihama Nuclear Power Plant will enter a cooling-off period extending to the end of 1999. The decision was made as a result of a petition submitted to the Mie Prefectural Government in March by the residents of Nanto-cho, the location of the construction site. The petition requested the prefecture to put the plan into a "cooling-off" period, and to suspend the activities of Chubu Electric Power Co. (CEPCO) concerning acquisition of land for the plant during this period. Upon receiving the petition, the Mie Prefectural Assembly unanimously approved the petition. On 8 July, the prefectural government requested CEPCO and the authorities of Nanto-cho and Kisei-cho to accept the decision and received their approval. The construction plan entered the cooling-off period beginning from that day.

One thing that made this possible was the list of signatures submitted to the governor of Mie Prefecture in May 1996. The list contained a total of 812,335 signatures of anti-nuke citizens, more than half the prefecture's electorate.

Because the construction plan has had to be suspended, CEPCO has decided to withdraw 25 negotiators working on land acquisition from the two locations before the end of July.

### Kashiwazaki-Kariwa 7 and Genkai 4 Began Commercial Operation

On 2 July, Kashiwazaki-Kariwa 7 (ABWR, 1356MW) in Niigata Prefecture began commercial operation. In the same month, on 25 July, Genkai 4 (PWR, 1180MW) in Saga Prefecture, also came into operation, bringing

the total number of reactors operating in Japan to 52, with a combined total output of 45,083MW. Operation of the Kashiwazaki-Kariwa 7 has increased the Kashiwazaki-Kariwa facility's total output to 8,212MW, making it the largest nuclear power plant site in the world.

On May 21, the reactor experienced a stoppage during full-power test operation. The reactor had to be stopped manually when the turbine began to make a strange noise, caused by a rupture in a pipe that measures steam pressure inside the turbine.

### Move to Expand Spent Fuel Storage Capacity

On 16 June, Kansai Electric Power Co. (KEPCO) asked Fukui Prefecture and Ohi-machi for approval of its plan to affix stainless-steel walls and install racks to the spent fuel stand-by storage pits in Ohi 3 and Ohi 4 reactors so that they can be used as spent fuel storage pits. As a result, the storage capacity of the two reactors will be expanded to 11 cores from the current 5 cores.

On the same day, the Japan Atomic Power Co. (JAPCO) also submitted a request to Fukui Prefecture and Tsuruga City to approve its plan to replace the racks in the spent fuel storage pits at Tsuruga 1 and 2 reactors with those made from stainless-steel containing boron to assure subcriticality (reracking). This will allow JAPCO to store spent fuel in higher density. If the plan is approved, the storage capacity of Tsuruga 1 reactor will increase from the current 2.5 cores to 4 cores, and that of Tsuruga 2 will increase from the current 5 cores to 9 cores.

At other nuclear power plants, various methods to increase the spent fuel storage capacity are either in plan or being implemented.

## Candidates Welcome Radioactive Wastes

A mayoral election was held in June at Okayama Prefecture's Kami-Saibara village where the Power Reactor and Nuclear Fuel Development Corp.'s (PNC) Ningyo-toge office is located. During the election campaign, all three candidates appealed for the retention of the PNC office, adding that as long as safety is guaranteed, they will be willing to accept even high-level radioactive waste.

The PNC Ningyo-toge office has been conducting technological development of uranium enrichment, but since the enrichment plant at Aomori's Rokkasho village began commercial

operation, the uranium enrichment prototype plant had been scheduled to cease operation in the near future. However, due to the accident at the bituminization plant at the Tokai Reprocessing Plant, PNC may terminate the operation sooner.

At the Ningyo-toge office, there are about 500 workers, including 190 PNC staff, 140 staff from a third-sector organization headed by the village mayor, and staff working for companies related to PNC. The question of whether the PNC office should be retained may be a matter of life and death for the village, but to draw the conclusion that even high-level radioactive waste must be accepted because of this seems too dangerous.

### ANNOUNCEMENT OF NEW ADDRESS

The Citizens' Nuclear Information Center (CNIC) has moved to a new address:

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Please note that our phone and fax numbers are unchanged.

Phone: 81-3-5330-9520, Fax: 81-3-5330-9530

In addition, CNIC would like to announce the opening of our web site. The URL is:

<<http://www.kiwi-us.com/~cnic/>>  
Take a peek and get the latest information about  
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