NUKE INFO TOKYO

June/July 1994
No. 41

c/o Citizens' Nuclear Information Center
302 Daini Take Bldg., 1-59-14 Higashi-nakano, Nakano-ku, Tokyo 164 JAPAN
Phone:81-3-5330-9520, Fax:81-3-5330-9530

Plutonium Program Set Back 10 Years

Proposed Revisions to Long-Term Program Draft Announced

Main Points of Change

	Present Plan	Revised Plan
Demonstration FBR	Start construction at the end of 1990s	Start construction at the beginning of 2000s
Commercial FBR	Establish in the 2020s to 2030s	Commercialize by 2030
MOX in LWRs	First half of 1990s: To be used in one BWR & one PWR Latter half of 1990s: About 10	Latter half of 1990s: A few Around 2010: About 10 Around 2010: Around 12-13
MOX Fuel Fabrication Plant	Establish a concrete plan by early 1990s	Around 2000: Designate a company to work on a plant to manufacture 100T/yr MOX
Rokkasho Reprocessing Plant	Start operation by mid-1990s	Start operation around 2001
Second Reprocessing Plant	Start operation around 2010	Make final decision around 2010
Pilot plant for reprocessing FBR spent fuel	Start operation around 2001	Start operation in mid-2010s

IN THIS ISSUE

Prototype fast-breeder reactor Monju (280MW), reached criticality on April 5. Monju is scheduled to start power generation in April 1995. The output will then be increased gradually, and the reactor will supposedly begin full operation in December 1995.

Monju's start-up operation was delayed three times before criticality was finally achieved one-and-a-half years behind schedule. During this period, things became a lot more difficult for the FBR. Even the Ministry of Foreign Affairs and the Ministry of International Trade and Industry called for a review of Japan's plutonium utilization program. At a public hearing held as part of the review of the Long Term Program for Nuclear Energy Development and Utilization, many participants demanded the abandonment, suspension, or slowdown of the Program.

Revisions of the Long Term Program have been undertaken since 1992 by the Long Term Program Committee, a subcommittee set up within the Atomic Energy Commission (AEC). The plutonium utilization program is the most controversial of all the points under consideration. A draft report of revisions to the Long Term Program was revealed by the AEC on May 18. A brief outline of the changes is shown in the table.

Roughly speaking, it is proposed to postpone the present program by ten years and reduce plutonium demand and supply levels by 10 tons from those (for the 1991-2010 period) provided in the AEC plans announced in August 1991. Nevertheless, the basic policy of pursuing plutonium utilization remains unchanged. The changes can be seen as mere adjustment of the program due to unavoidable delays in development work.

The new plan proposes to compensate for reduced plutonium utilization by using a higher percentage of MOX fuel in light water reactors (LWRs). This is intended to balance supply and demand levels, but it can hardly be considered feasible. And failure to do so will inevitably result in a large surplus of plutonium. Wide public is strongly opposed to plutonium utilization due to environmental and proliferation concerns. And industry is questioning the economics. It seems that several hurdles must be cleared before the subcommittee report is incorporated into the final revisions to the Long Term Program.

Plutonium Demand & Supply

Supply			Demand	
Domestic Recovery	«1994-1999» From Tokai (including Pu sent back from Europe)	about 4 tons	Joyo Monju Fugen	about 4 tons
	«2000-2010» From Rokkasho & Tokai	35-45 tons	Joyo, Monju, Demonstration FBR, Fugen, Demonstration ATR	15-20 tons
			LWR	20-25 tons
«1994-2010» From overseas reprocessing		about 30 tons	FBR, ATR	several tons
			LWR	Most of the remainder
Total		70-80 tons	Total	70-80 tons

Tension Rises in Korean Peninsula

At the time of this writing, tension is increasing anew over the suspected North Korean nuclear weapons program, as the three-man IAEA inspection team starts work at Yongbyon, the site of a nuclear complex in the DPRK (Democratic People's Republic of Korea). It seems that North Korea has just started unloading its 5 MW_e (25 MW_{th}) reactor, but it is reported that "quite a few fuel rods" have already been taken out of the reactor core.

The IAEA is demanding that it be allowed to observe the unloading and refuelling and to take samples from the removed spent fuel to conduct a radiochemical analysis to guarantee that the fuel will not be diverted.

Although negotiations between North Korea and the IAEA are still underway, it seems unlikely that North Korea will ever accept the IAEA demands. Washington has already hinted at taking strong steps if refueling goes ahead without an international inspection, including calling on the UN Security Council to impose economic sanctions on North Korea.

The possible UN resolution on economic sanctions is going to be a very hot political issue in Japan. Already in February this year, Ichiro Ozawa, who is becoming increasingly influential in the new coalition administration, announced to the press that he was convinced North Korea was already armed with nuclear weapons. His remark is generally regarded as suggesting that Japan be militarily prepared against North Korean nuclear forces. He now hints at amending the Self Defense Force Law to enable the SDF to engage in operations like a sea blockade. Koji Kakizawa, the new Foreign Minister, told the press immediately after his inauguration that the interpretation of Article 9 of the Constitution, which is officially taken to deny Japan the right of collective defense, should be reconsidered to prepare for a contingency in the Korean Peninsula.

We are opposed to any kind of countermeasures being taken against North Korea. We believe that the tension over the North Korean nuclear program can only be defused by peaceful negotiations. If the US-led UN were to resort to sanctions, then North Korea would really resort to nuclear arms. The controversy can only be settled within a framework of total denuclearization of the Korean Peninsula. Japan, which experienced the Hiroshima and Nagasaki bombings, should and can take the lead in such a peaceful effort to denuclearize the Korean Peninsula.

If Japan is to take this role, however, it must itself be transparent in its non-proliferation policy. Everybody in Japan was recently shocked by the news that there was a discrepancy of as much as 70 kg between the plutonium input and output at the Power Reactor and Nuclear Fuel Development Corporation (PNC)'s Tokai Plutonium Fuel Production Facility (PFPF). Although this discrepancy, or "hold-up," seems to have been due to plutonium sticking to glove boxes, other Asian countries may well suspect the possibility of diversion because 70 kg is almost 9 times the "significant quantity" (quantity required to manufacture one atomic bomb). The large hold-up was first revealed by the Nuclear Control Institute and both the IAEA and the Japanese government admitted it only after the revelation. It was known to us that although the two had been aware of the anomalous buildup of a plutonium hold-up at PFPF for years, they had let PNC continue fabricating MOX fuel for Monju without cleaning out the glove boxes to enable Monju to go critical as soon as possible, while at the same time protesting loudly about a possible North Korean plutonium buildup of a much smaller amount. A prerequisite for the denuclearization of the Korean Peninsula should be the absence of such obfuscation and double standards.

HLW TRANSPORT -- Series No. 3

The shipment of highly radioactive waste (HLW) from France will begin next February, the Federation of Electric Power Companies announced on April 20. The first 2-ton shipment is comprised of waste arising from reprocessing the spent nuclear fuel of Tokyo, Kansai, Shikoku, and Kyushu Electric Power Companies. It will be in 28 vitrified canisters stored in one cask, and will be transported in a British spent nuclear fuel carrier. The French company Cogema will be responsible for the shipment.

The ship will leave France at the end of February, arriving in Aomori sometime in March-April, thereby avoiding the controversial gubernatorial election scheduled to take place at the beginning of February. Originally, the French had repeatedly expressed their strong intention of shipping the waste before the end of this year, which would have scheduled its arrival in Aomori for the beginning of February. Under strong pressure from the present pro-nuclear governor, however, the shipment has been delayed.

APPROVAL OF EN ROUTE GOVERNMENTS NOT SOUGHT

The transport route will be disclosed to related governments and agencies once it is settled. However, they will not seek the approval of any of the en route governments, according to the discussion CNIC had with the Science & Technology Agency (STA) on April 7. They said at the meeting that the data from the testing of hot samples would be disclosed, but this might not necessarily be before the shipment. The testing would be conducted merely for confirmation purposes, they said. CNIC demanded that they disclose the data early enough to conduct a safety analysis.

In the UN Convention on the Law of the Sea, which was ratified on December 16, 1993, and comes into force on November 16, 1994, Article 192 states that 'States have the obligation to protect and preserve the marine environment.' In order to fulfill this obligation, Article 206 states that countries that undertake 'activities under their jurisdiction or control that may cause substantial pollution of or significant and harmful changes to the marine environment shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments' to nations that may be affected by the project.

Professor Jon Van Dyke of the University of Hawaii at Manoa states that such an environmental assessment should include the following elements:

1) The probable impact of the proposed action on the environment.
2) The adverse environmental effects that cannot be avoided if the proposal is implemented.
3) An analysis of alternatives to the proposed action and a comparison of the costs and benefits of each alternative with the proposed action, including the alternative of no action.
4) The relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity.
5) Any irretrievable and irreversible commitments of resources that would be involved in the proposed action if it is implemented.

Although the transport route has not yet been designated, it is highly probable that the shipment will pass through the Panama Canal and across the Pacific, as did previous spent fuel shipments. The governments of Caribbean, Central and South American

nations, and Hawaii, are entitled by the Convention to demand the Japanese government conduct such an environmental impact assessment.

HOW MUCH HLW WILL BE TRANSPORTED?

At the discussion CNIC had with the STA on April 7, the government repeated that 'all waste, which means low, intermediate, and high-level radioactive waste arising from overseas reprocessing contracts, is to be returned to Japan, including the waste from Magnox reactors.' The number of vitrified HLW canisters to be returned, they said, is somewhere between 3 and 4 thousand.

The figures submitted by the STA last November show that the total amount of spent fuel covered by overseas reprocessing contracts is 7,100 tons. It seems, therefore, that the figure of "between 3 and 4 thousand" vitrified high level waste canisters is too small.

According to Cogema and BNFL data which CNIC acquired from independent sources, the total amount of spent fuel subject to overseas reprocessing contracts is indeed 7,098 tons, but only some contracts, amounting to 5,692 tons, have return clauses as an option, and these contracts were concluded after 1977. The STA official was not aware of the older contracts which do not have return clauses.

The number of vitrified canisters arising from the reprocessing of 1 ton of spent fuel is 0.73 in the case of Cogema and 0.54 in the case of BNFL. These figures lead to the total figure of 3,220 vitrified HLW canisters as asserted by the STA. However, 1 to 2 vitrified canisters to a ton of spent fuel would be more realistic, in which case, the number of vitrified HLW canisters to be returned would be several times this amount.

In the meantime, it has transpired that the STA is largely ignorant of the details of the contracts and the total quantity of waste to be accepted. It appears to have just accepted the figures submitted by the utilities without subjecting them to scrutiny. STA officials seemed totally unaware of how controversial the 'return clause' issue had been at the public inquiry held in 1976 to consider the construction of THORP in the U.K. They even said they had not heard about the 'curie-to-curie substitution system' which has been proposed and investigated by RWMAC (Radioactive Waste Management Advisory Committee) and has long been discussed in the British Parliament.

HOW ABOUT THE LLW?

In the case of low level waste (LLW), the government has said that it will construct a new temporary storage facility near the HLW storage facility under construction in Rokkashomura, and will store all the returned waste. But there seem to be no concrete plans as yet and officials say they will draft plans when the schedule for the return is drawn up.

According to Cogema and BNFL figures, the total volume of LLW to be returned will be 30,000 cubic meters, which would amount to 150,000 drums of 200-litre size. But again, this figure may be too optimistic. Mr. Ishida, the head of the Bureau of Atomic Energy of the STA, replied to a question raised in the Parliamentary discussion in February 1993 that "it is very difficult to make assumptions" but that "it would be 20 to 30 times the original spent fuel." He continued by saying, "In France, they say it will be about 4 times the amount." Although the Japanese government has undertaken to accept 'all the waste' arising from reprocessing, it is highly uncertain what it means by 'all.' Incidentally, the calculations made by Cogema and BNFL work out to 6 times and 15 times respectively, the volumes of the original spent fuel.

Table 1. Japanese Reprocessing Contracts and High Level Waste

CNIC 1994

Fuel	Year of contract	Utility	Reprocessor	Contract amount (ton HM)	Return clause	Number of glass canisters to be returned	
GCR	1968	JAPCO	BNFL	580	No		
				complement 920	Yes	110	(0.12/ton HM)
LWR	1971*	JAPCO	BNFL	166	No		
		TEPCO	BNFL	509	No		
		KEPCO	COGEMA	UP-2 151	No		
				UP-3 600	Yes	440	(0.73/ton HM)
	1977-78**	ORC (10 Utilities)	BNFL	1,998	Yes	1,080	(0.54/ton HM)
		ORC (10 Utilities)	COGEMA	2,174	Yes	1,590	(0.73/ton HM)
Total				7,098		3,200	

* Old contract, ** New contract

Table 2. Wastes Returned from COGEMA

CNIC 1994

Waste type	Medium	Container	Containers /ton HM	Total number of containers	Radioactivity /container (Bq)
HLW	glass	material: stainless steel size: 0.4mφ × 1.3m high volume: 170 ℓ	0.73	2,030	α 1.4E14 βγ 2.8E16 wattage: 2.0 kW
Low & Interm.					
Hulls	cement	material: stainless steel size: 1.1mφ × 1.7m high volume: 1,300 ℓ	0.4	1,110	α 2.4E12 βγ 1.4E15
α waste	cement	material: asbestos cement size: 1mφ × 1.5m high inner canister: 400 ℓ	1.4	3,880	α 7.4E10 βγ 7.4E11
non-α waste	cement	material: asbestos cement size: 0.9mφ × 1.2m high inner drum: 200 ℓ	5.4	15,000	βγ 3.7E9
chemical precipitates	bitumen	material: stainless steel size: 0.6mφ × 0.9m high volume: 210 ℓ	3	8,320	α 1.9E10 βγ 3.7E12
Total				30,300	(8,020m^3; 2.9m^3/ton)

Table 3. Wastes Returned from BNFL

CNIC 1994

Waste type	Medium	Container	Containers /ton HM	Total number of containers	Radioactivity /container (Bq)
HLW	glass	material: stainless steel size: 0.4mφ × 1.3m high volume: 170 ℓ	LWR 0.54 MGX 0.12	LWR 1,080 MGX 110	LWR α 3.5E14, βγ 4.5E16 MGX α 6.1E13, βγ 4.5E16 wattage: 2.5 kW
Intermediate					
Hulls	cement	material: stainless steel size: 0.8mφ × 1.2m high volume: 500 ℓ	0.77	2,250	BWR α 4.2E10, βγ 6.8E13 PWR α 8.0E10, βγ 1.6E14
Centrifuge slurry	cement	ditto	0.45	1,310	PWR α 1.5E11, βγ 6.3E13
Others	cement	ditto	0.044	260	α 6.0E7, βγ 2.6E11
Pu contaminated waste					
flammable	cement	material: stainless steel volume: 500 ℓ	0.05	150	α 7.5E10, βγ 2.7E12
inflammable	cement	ditto	0.1	290	α 4.2E10, βγ 1.5E12
LLW	cement	material: steel size: 2.1mH × 3.8mL × 1.8mW volume: 9,000 ℓ	0.75	2,190	α 1.1E8, βγ 1.9E9
Total				7,640	(22,000m^3; 7.6m^3/ton)

WASTES TO BE RETURNED

Overseas reprocessing 7,100t

Type of waste	Number of transports	Chemical form		Destination	Final disposal
Pu 45t		oxide powder	2 t	Tokaimura	
	20	MOX	1,000 t		
HLW	30-60	glass canisters	3,200 (→9,000?)	Rokkasho-mura	?
LLW & ILW	50-150	cemented & bitumenized 200ℓ- drum equivalent	150,000 (→400,000?)	Rokkasho-mura	?
Recovered uranium		yellow cake	8,000 t	?	

INTERNATIONAL SYMPOSIUM ON REPROCESSING TO BE HELD BY CNIC IN AOMORI!

Date: June 26, 1994
Place: Aomori City Bunka Kaikan, Aomori
Time: 10 am - 5 pm

Speakers & Themes

1. Dr. Frans Berkhout (Sussex Univ., U.K.)
   The Rationale and Economics of Reprocessing.
2. Michael Sailer (Öko-Institut, Germany)
   Federal Atomic Act and the German Situation of Plutonium Utilization.
3. Takaharu Hirai (Meijo Univ., Japan)
   The Economy of Rokkasho Reprocessing Plant.
4. Jan Michiels (SEVI, Belgium)
   The Belgium Nuclear Fuel Cycle Backend Policy with Regard to MOX.
5. Dr. Jinzaburo Takagi (CNIC, Japan)
   Overseas Reprocessing Contracts and Transport of Wastes.
6. Message from Landrat Hans Schuierer of Wackersdorf, Germany.

Unanimous Decision to Reject Any Nuclear Power Plant

On March 18, by unanimous decision, the town council of Kamae-machi, Oita Prefecture, which lies near the center of eastern Kyushu, voted to declare the town off-limits to nuclear power plants. Forty years earlier, the Ministry of International Trade and Industry had sent a team to the area to conduct geological surveys to determine the feasibility of building a reactor there, but opposition from local groups, including the fishermen's union, led to the project being dropped. Over the years, however, rumors persisted that the town would become a site for a plant, and it was this uneasiness which led the town council to unanimously support the mayor's resolution.

The resolution stated that although the Japanese government is promoting nuclear plants, in the light of accidents and radioactive waste problems in other countries, "We cannot be certain the power plants are safe." The local people's distrust of the Japanese government's "safety guarantee" is shown clearly by this. The resolution went on to say that, "We are totally opposed to the construction of any nuclear plant either in our town or in neighboring ones." We need to pay special attention to the fact that this resolution breaks with established practice, as it is the first instance of a local body opposing plants not only in its own jurisdiction but in surrounding towns as well.

On the day of the resolution, March 18, the Kyushu Electric Power Company's Genkai 3 reactor commenced commercial operations. There are now 47 reactors online in Japan, producing a total of 38,541 megawatts of electricity, and additional 7 reactors under construction which will produce further 6,987 megawatts. Moreover, the government's master plan drawn up by the Electric Power Development Coordination Council (EPDCC) calls for two more plants with 1,640 megawatts.

In April the different electric power companies compiled their plans for power plant construction projects. The proposal adopted by the EPDCC calls for the construction, in the next two years, of 11 plants generating 12,593 megawatts. The fact that such a proliferation of new plants is being proposed on top of the fact that so many exist today is out of line with international trends, and we can say that Japan is an unusual "nuke-promotion nation." Both current and planned nuclear plants, however, are concentrated in 12 prefectures, and in addition, many are concentrated in single sites. Typically one plant is quickly built before people become aware of the danger involved, and once a first is completed it becomes difficult for residents to oppose additions to the site.

On the other hand, it should be emphasized that since the 1970s, not a single plant has been built on a new site. Year after year the plans for new nuclear plants included in the power companies' plant construction schedules are delayed for one or two years.

We can see, therefore, that opposition to new plants has become very strong, and the clear anti-nuke resolution passed by the Kamae-machi town council has profound significance.

NEWS WATCH

Fishing Coops Accept Compensation for ATR-Ohma

A settlement has been reached on compensation for damage to fisheries resulting from the planned construction of the advanced thermal reactor (ATR) demonstration reactor which the Electric Power Development Co. (EPDC) is planning to build in Ohma-cho, Aomori Prefecture. The Aomori prefectural government obtained discretionary powers to act for two local fisheries cooperative associations and the EPDC agreed to increase the level of compensation. The two cooperative associations at their general meeting decided to accept the offer and give up a part of their fishing rights: the Ohma association agreed on April 22 to accept ¥7,061 million and the Okoppe association agreed on April 25 to accept ¥3,881 million, an average ¥8.19 million per member at Ohma and ¥10.26 million at Okoppe. This is an unprecedented figure for compensation for a 606 MW power plant.

One fourth of the Okoppe members, however, expressed their opposition, flustering the promoters who had thought the settlement finally had broad support. Although the issue has now been settled, after a nine-year struggle starting in 1985, when the members refused even to have a negotiator in the association, there are still many fisherpeople who are opposed to "selling the sea."

There is strong opposition among the landowners of the planned site as well, and about thirty of them still refuse to sell their land. Though fisherpeople have been forced by a majority vote to forfeit their fishing rights, EPDC cannot build the reactor unless all the landowners agree to sell their land, especially the land for the crucial part of the planned site.

The ATR was originally developed as a transition from the light water reactor (LWR) to the fast breeder reactor (FBR). EPDC claimed the selling point of the ATR was that it would produce more plutonium than an LWR, but they now call it a plutonium incinerator. The construction cost, formerly said to be ¥300 billion, is now estimated by EPDC to be ¥470-480 billion.

Unprecedented Lawsuit Filed Against Power Company

Twenty five stockholders of the Chubu Electric Power Co. filed a suit in the Nagoya District Court on April 26 for compensatory damages against nine directors, claiming that the management had caused damage to the company by spending a large amount of money on the planned construction of the Ashihama nuclear plant. It was thirty years ago, in 1964, that the power company first announced its plan to construct the Ashihama plant but there is still no prospect of acquiring the necessary land. In 1988 seven local fisheries cooperatives in Nanto-cho passed a resolution reconfirming their opposition; the mayor declared that the town would not appropriate a nuclear-related budget; and the governor of Mie Prefecture announced

the temporary freeze of the nuclear-related budget. The stockholders have demanded the company make reparations of ¥6 billion - the amount it has spent on the plan since 1988 - claiming that the company should have abandoned the plan at that point. They also demanded compensation for the ¥200 million the company paid to Kowaura Fisheries Cooperative Association in December 1993 as advance compensation to the local fishing community for alleged damages, stating that the payment was illegal.

Such a lawsuit is unprecedented in Japan.

400,000 Sign Petition to Designate Worker's Death Labor Accident

The parents and friends of Mr. Shimahashi Nobuyuki (then 29 years old) who died of chronic myeloleukemia in 1991 after having worked at Chubu Electric Power Co.'s Hamaoka nuclear plant, on April 22 presented a petition signed by 400,000 people to the Ministry of Labor, demanding the sooner designation of his death as a labor accident. They also visited the Science and Technology Agency to present a request to lower the legal ceiling for exposure to radiation.

Underground Nuclear Plant in Siberia

According to a Tass news release on April 8, Russian Atomic Power Minister Mikhailov stated that the ministry has agreed with Japan to construct an underground nuclear power plant of 200-300 MW in Komsomol'sk-na-Amure in the far-eastern part of Russia. The details are not yet known.

* * *

NUKE INFO TOKYO is a bi-monthly newsletter which aims to provide foreign friends with up-to-date information on the Japanese nuclear industry, as well as on the movements against this industry in Japan. Please write to us for a subscription (subscription rate: supporting subscriber $40/year or ¥5,000/year, subscriber $20/year or ¥3,000/year). The subscription fee should be remitted from a post office to our post office account No:00160-0-185799, HANGENPATU-NEWS by postal money order. We would also appreciate receiving information and newsletters from groups abroad in exchange for this newsletter.

NUKE INFO TOKYO Publishing Committee
c/o Citizens' Nuclear Information Center
302 Daini Take Bldg., 1-59-14 Higashi-nakano,
Nakano-ku, Tokyo 164, JAPAN
Phone:81-3-5330-9520
Fax:81-3-5330-9530