Japan's Nuclear Nightmare

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by Eric Johnston

In late October 2004, nearly 200 people from around Japan gathered at a public hearing in Osaka to discuss the future of nuclear power. Sponsored by the Atomic Energy Commission, which is responsible to the prime minister, members of the "public" who were present included pronuclear power utility company executives on one side of the room and antinuclear activists on the other.

The Osaka meeting was the first since the AEC had said, just a few days prior, that it wished to go ahead with plans to reprocess spent nuclear fuel, despite revelations earlier in the year that the government had suppressed a report compiled in the mid-1990s that concluded burying spent fuel was cheaper than recycling it.

Such public hearings had long been derided by antinuclear activists as a government-sponsored farce that never led to real changes in Japan's pronuclear policies. But there was reason to believe that the Osaka meeting would be different. In the audience were residents of Mihama, Fukui Prefecture, who had come to express concern over an accident in August that killed five people and showed that Kansai Electric Power Co., based in Osaka and responsible for the plant where the accident occurred, was guilty of gross negligence.

At 15:22 on August 9th, a fire alarm sounded within the building at the Mihama No. 3 plant that housed the turbine. A pipe in the secondary coolant system had ruptured, and an estimated 800 tons of scalding water 140 degrees Celsius was released, scalding the five workers of Nihon Arm, a KEPCO sub-contractor.

As it turned out, the pipe had never been checked during the 28 years of the plant's operation. When originally installed, it had been 10 mm thick. But after nearly three decades, it had worn down to 1 mm. In the following days, it was learned that Nihon Arm had warned KEPCO in April 2003 of potential problems with that particular section of pipe, but these warnings had been ignored. While KEPCO President Fujii Yosaku bowed deeply in apology to the families of those who were killed, he did not apologize for KEPCO's failure to follow up on the Nihon Arm report. When quizzed by antinuclear activists immediately following the accident, KEPCO officials expressed regret and admitted they were ultimately responsible for the plant, but said it was not possible to say who was responsible for the accident.

Though KEPCO officials would not comment, antinuclear activists and even many nuclear physicists who supported nuclear power pointed to deregulation of the electric power market as one factor behind the accident. By law, each nuclear power plant has to shut down once a year for inspection. In the late 1970s and early 1980s, plants shut down for three or four months while thousands of workers from utility and related subcontractors conducted inspections. But since then, the inspection times have gradually been shortened, and currently a plant might shut down for only about six weeks. Prior to the Mihama accident, KEPCO and the other

utilities were pressuring the government to lower the inspection time to just one month, in order to keep the plants operating as much as possible in the new age of deregulation.

Yet, even as the inspection time was shortened, the plants were becoming older, requiring more maintenance and careful inspection. Back in the early 1970s, experts thought that the life of a nuclear power plant was about 30 years, perhaps 40. Now that the Mihama No. 3 plant and many others are 30 years old or more, and operating in a period where deregulation means added pressures to cut costs, the utilities say that perhaps a plant's life can be doubled to 60 years. Yet, at the same time, the utilities claim that in order to continue to provide cheap electricity, it will be necessary to shorten the length of inspection time on these aging plants to just one month.

So the October meeting offered the chance not only to clarify further who was responsible for the Mihama No. 3 accident, but also to engage in real debate about basic issues related to nuclear power. But hopes for such discussion were quickly dashed. Antinuclear activists and pronuclear supporters simply retreated to long-held positions. "Japan is resource-poor. We need nuclear power," said one of the pro-nuclear men in the audience, to scattered applause from those around him. "Nuclear power is no good. No more nuclear power plants," said a woman who is anti-nuclear activist, to murmurs of assent from those seated around her.

It was clear that most Commission members were either pro-nuclear or felt that to encourage spirited discussion of basic issues like the necessity of nuclear power was not part of their mandate. After all, they had a five-year plan for Japan's nuclear power industry that they had to compile by late 2005, and since nuclear power was already providing about a third of the nation's electric power needs overall, what was the point in arguing with people who didn't want it? The result of the meeting was not a lighthearted farce, but something that looked as rigged as a pro wrestling match.

And so it was. Just a few weeks later, on November 12th, the Atomic Energy Commission released an interim report on nuclear fuel recycling and concluded that it should go forward. Virtually none of the facts presented by the anti-nuclear activists were acknowledged. But when it comes to Japan's nuclear power industry, inconvenient facts often do not matter.

Japan's Nuclear Power Industry

In 2004, Japan had 53 nuclear power reactors (52 were in operation), which made it third in terms of number of plants after the United States (103) and France (57). Over the past quarter century, as many other nations attempt to find alternate energy sources, nuclear power has gone from 17 percent of Japan's total electricity supply in 1990 to 34.6 percent of total supply in 2004. Five more nuclear power plants are currently being built, and the utilities want to increase the 34.6 figure to 40 percent by 2010, with other fuel sources, like liquid natural gas and coal, comprising about 20 percent each and the remainder being sources like hydroelectric power.

In the 2003 White Paper on Nuclear Power, the utilities' chart for which energy sources will be in use for electric power generation by 2010 includes no mention of alternate sources like wind, solar, or biomass. And when looking at the figures for total energy sources consumed, as opposed to sources just for electricity generation, nuclear power still plays a major role in Japan. In 2003, nuclear power accounted for about 17 percent of Japan's total energy basket, as opposed to 8.9 percent for the U.S., 11 percent for the United Kingdom about 13 percent for Germany. By contrast, an energy-hungry China, with plans to quadruple its nuclear power by 2010, exceeds Japan and all others in aggressively promoting nuclear power.

Clearly, despite official pronouncements by Ministry of Economy, Trade and Industry officials that it will simply remain an important part of Japan's overall energy mix, nuclear power will become the dominant source of electricity if the utilities, and many pronuclear officials in the government, have their way. If they do, it will be the realization of a dream that began a half-century ago.

Atoms for Peace

Japan's nuclear power history dates back to the mid-1950s, when a young nationalist politician by the name of Nakasone Yasuhiro became one of the strongest political advocates for a nuclear power program. In 1954, the United States began encouraging the international development of nuclear power for peaceful purposes under the title of "Atoms for Peace" and Nakasone saw nuclear power as the way to a realize a dream Japan had nurtured since the Meiji period: a cheap and stable energy supply that could reduce dependence on foreign oil.

In 1955, under Nakasone's guidance, the Diet passed a budget which included funds for researching nuclear power. Within two years, several government bodies devoted to promoting nuclear power had been formed and plans for construction of nuclear power plants commenced. By 1965, the first of what would eventually become 53 nuclear power plants nationwide had gone into operation.

In the early years, the country's nuclear power program was advanced with little public opposition. By the early 1970s, concern about environmental pollution was high and public pressure over air pollution and the industrial pollution of rivers, lakes, and streams had forced the Diet to pass a number of laws curbing industrial excesses. The pronuclear lobby realized nuclear power could be promoted as not only a cheap source of energy but also as an environmentally friendly alternative to fossil fuels.

It was at this time that the great drive to build nuclear power plants began. By 1979, there were 17 plants in operation nationwide, concentrated mainly in Fukushima and Fukui Prefectures. The Fukushima plants were operated by Tokyo Electric Power Co. and supplied power to Tokyo and the Kanto region, while the Fukui plants supplied power to the Kansai region.

Then, in 1979, the accident at the Three Mile Island nuclear power plant in America awakened many Japanese to the fact that nuclear power plants were not as safe as advertised. While there had always been a very small antinuclear movement, Three Mile Island jolted the national consciousness. Six years later, the accident at Chernobyl not only reinforced those fears but also spurred many ordinary Japanese to anti-nuclear activism.

Of particular concern was Japan's determination to go ahead with a fast-breeder reactor program despite a growing number of nuclear physicists and economists who doubted their usefulness. Unlike conventional nuclear power plants, fast-breeder reactors burn pure plutonium. During the conversion to energy, more plutonium is actually produced and can be extracted for later use -- an endless supply of fuel, at least theoretically.

FBR programs had been initiated in the United States and were in operation in both the U.S. and Europe in the 1970s, at a time when many experts predicted the world's supply of uranium would soon be depleted. But that proved not to be the case and this realization, combined with public unease over handling the world's most dangerous substance, led the U.S. to abandon the FBR program by the early 1980s. European countries began to follow shortly afterwards.

Japan, however, forged ahead with the controversial FBR program, building a prototype

reactor called Fugen and an experimental reactor called Monju, both in Fukui Prefecture. This decision to continue with its FBR program after the Chernobyl accident galvanized antinuclear activists in Japan and around the world, who also worried that the FBR program was actually a nuclear weapons program in disguise. Despite repeated denials that this was the case by those in the nuclear power industry, Japanese leaders like Prime Minister Hata Tsutomu, in 1994, stated Japan could build a nuclear weapon in a matter of weeks, if necessary, hinting that the fuel for the weapons could come from Japanese nuclear power plants. In 2003, influential opposition leader Ozawa Ichiro would make a similar comment.

By the early 1990s, the FBR program was moving forward despite mounting concerns, even among some pronuclear groups, that they were too dangerous and too expensive, when the whole program literally crashed and burned. In December, 1995, a pipe leak and sodium fire occurred at the Monju plant. The fire and subsequent investigations exposed a litany of problems not only in Monju but throughout the nuclear power industry. Indifferent management, lax safety precautions, and cover-ups by the bureaucrats responsible made headlines and resulted in a major shake up in the nuclear industry as public faith in nuclear power plummeted.

Realizing the odds of operating an FBR anytime soon were now very much against them, the utilities and the nuclear power industry, without abandoning their original goal of operating FBRs, decided an interim solution would be to burn mixed plutonium-uranium fuel, otherwise known as MOX. But this created new problems. Japan had no way to make MOX. It had to be manufactured in England or France and then transported halfway around the world.

Countries like New Zealand announced such cargo would not be allowed to pass through their territorial waters, and many Caribbean nations also voiced opposition. Would the ships receive a naval escort all the way to Japan? What would happen if they ran into a typhoon or were forced to make port? There were also worries, even in this pre September 11th world, of terrorists or pirates in the Malacca Straits or the South China Sea boarding the ships. Between 1995 and 1999, the argument raged, but Japan's politicians, bureaucrats, and utility companies had only one message: MOX is safe, the ships are safe from terrorist attacks, and the cargo will arrive safely. As history was to show, MOX could be sent to Japan without incident, at least en route. But after the fuel arrived, it was a different story.

Nuclear Autumn

On the morning of September 30th, 1999, a warm wind was blowing into the bay of Takahama, Fukui Prefecture. Days earlier, two ships, each carrying MOX fuel had arrived in Japanese waters after a long voyage from Sellafield, England. The fuel was to be the first of what Japan hoped would be many shipments of MOX for its conventional nuclear reactors.

The first ship had already delivered its cargo to a plant on the Pacific Ocean side of Japan. Now, both vessels were heading north, planning to go through the Tsugaru Straits that separate Hokkaido and Honshu islands, and deliver the second cargo of MOX fuel to the Takahama nuclear power plant on the Japan Sea, about 700 kilometers from the coast of North Korea. In preparation, coast guard vessels made regular patrols of the inlets near Takahama and police set up roadblocks and conducted security checks near the plant.

But it was not the danger of North Korean saboteurs that most concerned those protesting the shipment. The greater fear was that something might be wrong with the fuel itself. Independent analysis of the quality control data related to the manufacture of the fuel showed

statistical anomalies that suggested somebody at British Nuclear Fuels Ltd., which manufactured the fuel, had cut corners to cut costs. Activists were not quite sure what the problem was, but requests to Kansai Electric Power Company, which had ordered the fuel for use in its Takahama plant, to hold off until answers could be found, fell on deaf ears. KEPCO officials insisted that the fuel was safe.

Thus, on September 30th, the attention of those in Japan and abroad with an interest in the country's nuclear power program was on the delivery of the fuel to Takahama. KEPCO and national nuclear power officials, Japanese and international antinuclear activists, townspeople and the media all were making plans be in Takahama for what was expected to be one of the largest Japanese nuclear power protests ever, directed against the arrival of the MOX-laden ship the next day.

Then, disaster struck. Not in Takahama, but in Tokaimura, north of Tokyo.

At 10:35 a.m., local media and residents began receiving the first sketchy reports of radiation leaking at a Tokaimura fuel conversion plant. It would later be learned that three workers in the plant had poured a uranium mixture into a settling tank, an amount that far exceeded safety limits and caused a nuclear chain reaction. But in the early hours, all was confusion. Despite rumors to the contrary, police insisted no fire had broken out.

Two hours later, police had blocked roads near the plant and were preventing anyone from coming closer than 200 meters from the plant. By 3:30 p.m., as the extent of accident became clearer, 50 families living within a 350 meter radius of the plant were ordered to evacuate. By 5 p.m. the Japan Atomic Research Institute was detecting two to four millisieverts of radiation per hour, or between 10,000 and 20,000 times the normal level, around the site. A radiation advisory to some 200,000 residents living within a 10 kilometer radius of the plant was not issued by Ibaraki Pref. Gov. Hashimoto Masaru until 8 p.m., nine and a half hours after initial reports of a radiation leak. The day ended with the Japanese government saying, in classic understatement, that uncontrolled criticality at the plant was continuing and that a larger area than was initially thought had been affected by radiation.

Two of the three workers who caused the accident died shortly afterwards. The accident showed there was something seriously wrong with the way the country's supposedly safe nuclear power program was being run. The callous disregard for basic safety procedures was not limited to those who had actually caused the Tokaimura accident, but was now recognized as a symptom of a larger disease: a culture of deceit, secrecy, and willful ignorance that permeated Japan's entire nuclear power industry.

On October 1st Japan, and the world, watched as men in "moon suits" moved through the quiet residential neighborhoods of Tokaimura with Geiger counters. Meanwhile, the ship carrying the MOX fuel for the Takahama plant was entering port, greeted by protestors from around the world. The ship delivered its cargo and KEPCO announced plans to burn the fuel before the end of the year, but the antinuclear activists had suddenly found a far more sympathetic public hearing for their suspicions that something might be wrong with the fuel.

Despite repeated KEPCO assurances that all was well with the fuel, the antinuclear activists, led by Kyoto-based Aileen Mioko Smith, made contact with antinuclear activists in and around the Sellafield plant and the British media. After much prodding by the activists and the British media (the Japanese media remaining virtually silent) the truth finally came out. Workers at British Nuclear Fuels admitted to The London Independent newspaper that they had had not

done quality control checks properly, falsifying data in order to complete the manufacture of the fuel on time.

Stung by these revelations and BNFL's subsequent official admission that the fuel data had been forged, KEPCO had no choice but to announce it would not burn the MOX. Yet KEPCO was still stubbornly convinced the fuel was safe, saying the decision not to burn the fuel had been reached not for technical reasons but in order to keep the public from worrying. The company, it seemed, remained unable or unwilling to take responsibility for it's past denials that all was well; those activists who had breathed a sigh of relief when they forced KEPCO to not burn the MOX worried that their victory was only temporary, and that KEPCO's corporate culture would lead eventually lead to disaster.

The 1999 accident at Tokaimura and the revelations that BNFL had falsified quality control data related to MOX fuel dealt two hard, but not fatal, blows to Japan's nuclear power industry. Within METI, which has control over the operation of nuclear power plants, both incidents led to a growing rift between bureaucrats who still supported nuclear power and those who were beginning to question it more aggressively. The pronuclear power Atomic Energy Commission, bowing to public pressure and internal debate within the government, eventually invited a member of the antinuclear group Citizens Nuclear Information Center to serve as a commission member.

Unanswered Questions

Yet despite the grand plans of the pro-nuclear lobby, Japan's nuclear power industry faces a host of questions and problems that threaten its future development, and even survival. The main issues are:

1) Reprocessing: Japan is scheduled to open the Rokkasho reprocessing plant in July 2006, nearly a decade after it was originally supposed to start, despite numerous safety concerns, against the advice of many in the domestic and international antinuclear movement. Even many in the nuclear power industry and central government are turning against the plant because of its huge costs. Recent admissions that it is cheaper to bury fuel than to recycle it have caused more heated debate, and a number of politicians like the Liberal Democratic Party's Kono Taro have openly come out against Rokkasho. Antinuclear groups in Japan received a boost in early January 2005, when Mohamed El Baradai, director-general of the International Atomic Energy Agency told the Asahi Shimbun that he favored a five year moratorium on reprocessing facilities in order to help ensure nuclear materials don't fall into the wrong hands.

2) Waste Disposal: In 2002, the central government announced it was looking for localities around Japan to host nuclear waste storage facilities. Officially, these would be "mid-term" facilities (i.e. temporary facilities until the fuel can be taken to Rokkasho and reprocessed) but nobody knows how long the fuel would have to remain in storage. Some local governments, desperate for the central government subsidies that would come with agreeing to host a site, have put their names forward, but several candidates, notably Mihama, face strong local opposition.

3) Safety: Deregulation of the industry is occurring just as many plants approach or enter their fourth decade of operation and at a time when accidents, cover-ups, and safety abuses have created great public unease. In an ever-more competitive atmosphere, where cost-cutting in plants that are rapidly aging is becoming the norm, critics point to last summer's fatal accident at Mihama as proof that safety issues are now taking a back seat to providing power more cheaply.

3) Nuclear weapons: Despite a stream of denials from officials that Japan will never use its nuclear power plants as the basis for a nuclear weapons program, and despite nuclear power industry bureaucrats and pro-nuclear academics who insist, wrongly, that nuclear fuel in power plants cannot be used for a nuclear weapons' program, domestic and international concern remains that Japan can, and would, use such fuel for a weapons program if prodded to do so by either the United States under the guise of a missile defense program, or if faced with an arms race elsewhere in East Asia. Comments like those noted above by Ozawa Ichiro, as well as past comments from far right politicians like Nishimura Shingo that Japan should have nuclear weapons, are seen by many as representative of Japan's true intentions.

4) The Future of Nuclear Power: Japanese officials still say that nuclear power remains a very important part of Japan's overall energy mix. While not always in tune of late, the pronuclear lobby has been basically singing the same four-part harmony for decades: (a) Japan is a resource-poor country; (b) Oil from the Middle East means attempting to secure a finite resource from a politically unstable part of the world; (c) alternate energy sources such as wind and solar power are too expensive and are not as reliable as fossil fuel energy sources; therefore, (d) nuclear power offers Japan a cheap, inexpensive (when you ignore construction, maintenance, and environmental costs and focus only on the bare costs of generating electricity) and reliable energy source.

Since the Kyoto Protocol was signed in 1997, the pronuclear lobby has also rushed to add that nuclear power is needed by Japan to meet its commitments to cut greenhouse gases. On the other hand, some huge Japanese firms like Mitsubishi and Toshiba, which have traditionally supplied much of the technology to Japan's nuclear power industry, are hedging their bets that they can continue to do lots of business domestically. These firms believe in the future potential for constructing, and selling equipment for, nuclear reactors to China and other parts of Asia now choking from fumes of cheap coal being burnt for fuel. They, therefore, back scientists, engineers, and others in the international community who suggest that nuclear power for China is a great way for the country to meet its growing energy needs and to reduce air pollution and environmental damage caused by coal-burning plants.

Over the past year, events ranging from the Nagoya High Court's surprise decision to uphold a lower court ruling that will keep Monju closed indefinitely (the decision is now being argued at the Supreme Court) to the Mihama accident this past summer, to growing opposition to nuclear power among many in the Diet, METI, and the utilities who have traditionally supported nuclear power, have bolstered the confidence of the antinuclear lobby.

Yet even with the victory in the courts over Monju and all of the accidents and scandals that have plagued the nuclear power industry, antinuclear forces have not yet been able to turn public unease and anger into an effective movement to stop nuclear power. This is partially because, despite the scandals and problems, nuclear power has come to be seen, even among many Japanese who don't like it, as a necessary evil. All the utilities, or the government, has to do is remind everyone that Japan is a resource-poor nation, or warn that, unlike nuclear power, oil and gas come from parts of the world that are politically unstable and that there is a danger of a cutoff of vital energy sources. Despite the specious logic of such arguments (uranium yellowcake also has to be imported for Japan's nuclear power plants, but nobody in the pronuclear lobby seems too concerned about a disruption in shipments or seizure by terrorists), they resonate with the public, especially those old enough to remember the panic that ensued during the oil shocks of the

mid-1970s.

Nor can the small, mostly volunteer antinuclear lobby compete financially with the huge, well-organized and well-financed pronuclear lobby for public and political attention. But antinuclear Davids have won major battles, indeed have virtually defeated the pronuclear Goliaths in many other countries. There are other more complex reasons for the failure of Japan's antinuclear lobby to make a strong political difference or even win widespread public admiration.

The reasons begin with many in the antinuclear lobby itself. While fiercely dedicated to their cause and often very well informed, antinuclear groups tend to be organized in small, tight-knit cliques. Each clique has its own area of specialty and has spent all of its energy and effort fighting for that one cause. Activists in Mihama often have little time or, sadly, inclination, to worry about what is happening in Rokkasho or Tokaimura.

The result is a movement that is extremely localized and often insular. Furthermore, many in the antinuclear movement are sixties leftovers, old supporters of various leftist causes who are often doctrinaire in their thinking and impervious to new ideas. They are unable, or unwilling, to reach out to people who are much younger than themselves, or to the broader public, including many in the government and in private industry, who agree nuclear power is a bad idea but do not necessarily want to hear about the evils of the Self-Defense Forces or U.S. imperialism. Nor do most Japanese feel comfortable standing outside a utility company, raising their fists, and shouting "Stop Nuclear Power!" These are the tactics that many in the antinuclear lobby continue to believe, wrongly, are necessary to stop nuclear power. However, they are precisely the tactics that turn off many potential allies.

So, as the Osaka meeting last October showed, the pro and antinuclear groups continue to snipe at each other and hold their positions with little regard to public energy needs. In a land where consensus, harmony, and cooperation are supposedly more innate than in many other cultures, the nuclear power debate is remarkable for bitter, entrenched emotions and grudges on both sides that are now decades old.

This is a tragedy. For Japan desperately needs a serious and wide-reaching national debate on how it plans to meet its energy needs in the 21st century, and whether nuclear power should be part of that energy mix. The announcement on November 12th by the Atomic Energy Commission that it wanted to continue with its plans for reprocessing has done nothing to advance the debate.

To date, nuclear power decisions have been made piecemeal by bureaucrats and politicians who were, or are, often under the influence of the utilities and nuclear power industry. Local governments that host nuclear power facilities, especially on the Japan Seat Coast, are now far too heavily dependent on central government subsidies and "gratitude money" from utility companies used to pay for mammoth train stations, elaborate fountains and statues, and ultra-modern theaters, like the 3-D movie theater in Tsuruga. Anti-nuclear activists have even charged that the utilities sponsored free "study trips" to France for Fukui residents, ostensibly to study the French nuclear power industry, but scheduled with plenty of time for a shopping trip to Paris.

Later this year, Japan will conclude its next five-year long-term plan for nuclear power. Over the following months, both sides will continue to argue their case and we are sure to see reams of statistics and pages of Op-Ed pieces arguing for or against nuclear power. Japan once had a dream that nuclear power would save a country poor in fossil fuel resources. Japan's pro-nuclear

lobby still clings to that dream. But the history of Japan's nuclear industry demonstrates only too clearly that their dream has turned into a nightmare not only for Japan but also the world.

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