



Nuclear Report *from* Taiwan

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ORCHID ISLAND: TAIWAN'S NUCLEAR DUMPSITE

The Yami Stand Vigil

(This is the second of a two-part series profiling the Yami people of Orchid Island and the nuclear waste depository that the government operates on their island. In the last issue we examined the history of the waste site, its effects on the island's environment, and the unique culture of the Yami people. This issue will present articles on the Yami protest movement and examine future alternatives for Taiwan's nuclear waste disposal.)

"Today I represent the Yami people. I wish to express our deep feeling about the nuclear storage site. This is the last time we come to speak peacefully about this. We have held peaceful protests many times. The Yami have decided that there will be no more.

"If you begin to expand the storage site, if you dig up one piece of earth, one rock, we declare war."

When Yami Presbyterian missionary and anti-nuclear leader Kuo Jian-ping spoke those words at a public hearing on nuclear waste disposal in Taipei on May 13, no one familiar with the Yami people's struggle to remove the nuclear waste depository from their island doubted the sincerity of his words.

The Yami's struggle with the government over the site began in the early 1980s with their realization that what they had been told was to be a fish cannery was actually a nuclear waste depository. But comprehension of nuclear waste hazard does not happen overnight, and it was not until the mid-1980s that most Yami were really aware of the dangers they were exposed to and the process by which they had been cheated by the government. From early on, it was the Orchid Island Presbyterian church which did much of the educating about nuclear waste, and to this day it remains the most vocal opposition group. In a recent interview, Yami church member Sian Ngarai expressed the Yami opposition and distrust of the government this way: "If the nuclear waste is really safe, as the government claims, then why did they tell us they were constructing a fish cannery? Why is the radwaste sent to Orchid Island? Why not store it in Taiwan? Why not at the Presidential Building in Taipei?"

The Yami began their public protest movement in 1987, five years after the first load of radwaste was shipped to Orchid Island. Their first large-scale protest occurred in February, 1988, when they requested the government to stop plans for expansion of the site and to set

a timetable for removal of the nuclear waste from Orchid Island. The protests continued in 1990 at a large Earth Day celebration in Taipei.

The peak of the movement came around the Chinese New Year season in February, 1991, when the Yami people rose up in protests which caught the attention of the media and public in all of Taiwan. Led by missionary Kuo, and with the support of anti-nuclear groups in Taiwan like the Taiwan Environmental Protection Union and the Green Association, the Yami anti-nuclear group held demonstrations on Orchid Island and in Taipei at which they presented three requests to the government:

- 1) Immediately stop the expansion of the second phase of the storage site;
- 2) Immediately stop the transport of radwaste to Orchid Island;
- 3) Set a timetable for removing the nuclear waste from Orchid Island. *(The government has always maintained that Orchid Island is only a temporary storage location.)*

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Protests by the Yami in March over a proposed national park on their island and this one at the May 30 demonstration against a fourth nuclear power plant have forced the Taiwanese to take note of the Yami situation. (photo: PYL/ANCT)

MESSAGE FROM THE PUBLISHER

On the Brink of Nuclear Collapse

by Jun-yi Lin, ANCT President

Taiwan stands at a crucial point in the development of its energy policy. In June, the legislature will decide whether to approve the budget for the proposed fourth nuclear power plant. If it passes, it will be the first and major step in Taipower's and the Atomic Energy Council's plans to develop a nuclear industry in Taiwan.

The government is countering the rising anti-nuclear movement with its own propaganda campaign. Last month, Taiwan's Premier, Lien Chan, made a strong public announcement to support the fourth nuclear plant proposal, the first time he had done so. The Ministry of Economic Affairs continues to claim that Taiwan's future economic development is tied to "Number Four."

But this year has also seen another phenomenon. With the recurring announcements of accidents at the power plants, the media seems to be taking a more objectively critical view of nuclear power than ever before. The public also seems to be increasingly sceptical of Taipower's ability to manage nuclear power plants.

Last week, on May 25, Lin Ying, vice president of Taipower, resigned, accepting responsibility for the numerous accidents at the nuclear plants this year. Taipower, under the pressure of knowing that its budget for the construction of the proposed fourth nuclear plant would come under review by the legislature this spring, had wanted to prove it was capable of managing nuclear power safely. The frequent accidents, however, have caused serious doubt about Taipower's ability to handle nuclear energy.

Investigation by the Atomic Energy Council (AEC) consistently finds that the majority of accidents at nuclear plants in Taiwan are due to human error. In an interview which appeared in the Independent Evening News on the day on which he resigned, Lin Ying was asked if it's true that Taiwan's nuclear plants are difficult to manage. Lin answered, "Yes and no. Like soldiers in the army, there are always some who are difficult to control. Certainly, most workers (at Taipower) are good. The department chiefs under me were very diligent. We just had bad luck."

But there is more to the safety of nuclear energy than just the day-to-day operations of nuclear plants. The radioactive nature of nuclear waste means that the effects of the nuclear energy we produce today may endanger future generations for centuries. In our continuation of the Orchid Island profile in this issue we examine the government's plans to find and build another site for permanent disposal of high and low-level nuclear waste. As small as Taiwan is, it is imperative to find a suitable solution to the

disposal of nuclear waste before we can consider building another nuclear plant.

Taipower would have us believe that we have only one choice: more nuclear plants or the collapse of Taiwan's industrial miracle. This is a gross oversimplification.

Instead of building another nuclear plant, Taiwan should follow the global trend of emphasizing conservation and efficiency in its energy policy. In other developed countries, power companies are encouraging consumers to conserve energy, and many governments have enacted energy usage taxes. But Taiwan still has no effective policy to promote energy conservation. According to the General Accounting Office, Taiwan's energy efficiency is 36% lower than a decade ago. Many energy researchers and economists in Taiwan today feel that by emphasizing conservation and encouraging use of energy-efficient products through incentive-based policies, Taiwan will not need to construct another power plant for at least the next fifteen years.

There are other energy sources more suitable for Taiwan than nuclear power. Many developed countries are switching from nuclear energy to natural gas, whereas in Taiwan, natural gas as a percentage of total electricity production has fallen nearly 40% in the last seventeen years.

Taiwan should also design its energy policy to take advantage of the natural resources offered by its unique geography. Solar, wind and tidal energy offer great potential, but remain largely unexplored in Taiwan. Again, incentive-based policy can be used to promote development and use of these renewable energy sources.

As Taiwan moves to further develop a fourth nuclear plant, we begin to see the government's poor planning and deceitful tactics more clearly. An example is the haphazard way of estimating the high cost of nuclear power without taking into account the hidden back-end costs, which aren't reflected in the initial NT\$170 billion (US\$7 billion) construction budget. If the past can serve as a guide, the plant when completed will cost some three times as much as budget estimates, or close to NT\$600 billion. As existing nuclear plants age further, we begin to see greater frequency of accidents (see related articles) and correspondingly greater costs.

For these and other reasons, we feel that another nuclear plant is not only unnecessary now, but indeed threatens the security of Taiwan.

For the past two issues, we have examined the storage of nuclear waste on Orchid Island. There is perhaps no better illustration of the ill-conceived policy that lies at the heart of the drive to nuclearize than what has happened on Orchid Island. In this way, the people of Orchid Island and the proposed nuclear plant are intrinsically connected. Poor government planning often takes its biggest toll on the lives of the poorest groups of society. Such is the case with the Yami, who are few in number, and who possess few financial resources to defend themselves.

In the Yami's situation are revealed the inherent limits on nuclear development in Taiwan. If the nuclear waste is moved away from Orchid Island, where can Taiwan put it? What place will be willing to accept it in their "backyard?"

On behalf of ANCT and the Taiwan Environmental Protection Union, I would like to thank all those groups and individuals who have shown their support by writing to us to protest against the construction of the fourth nuclear plant. Keep those letters coming!

Nuclear Report from Taiwan

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The Yami Stand Vigil *(continued from page 1)*

Under pressure, Taipower did agree to stop the second phase of expansion. But the waste shipments are still continuing. Taipower is in the process of considering other locations for a permanent disposal site, but has made no promises that it will remove the waste already stored on Orchid Island. And Taipower has recently announced plans to expand again, building six more storage trenches. Taipower justifies this expansion by claiming that the six trenches are not part of "Phase Two," but are an addition to "Phase One." This has the Yami furious.

The Yami's latest protests came in March, when some twenty representatives traveled to Taipei to protest against the nuclear waste site and the government's plan to make Orchid Island a national park. Wearing traditional battle uniforms including loincloths, the protesters again captured the national media attention and were successful in getting the national park proposal shelved at least for the time being.

But like minorities the world over, the Yami lack funds and expertise and simple numbers to fight the powers that exploit them. Even sending more than a few representatives to Taipei for meetings and protests can be difficult. The Yami's power to protest to the government is limited by the fact that their direct representation in the government only goes as far as the county council. Often their protests have stopped there because the council wasn't willing to carry their motions on to the provincial or national legislatures. Recently, however the Taitung county council has been more supportive of the Yami, and in March voted unanimously to oppose expansion of the Orchid Island nuclear waste storage site.

Another problem is lack of media attention. Except during a few specific periods of demonstrations, media attention has been limited to occasional articles in the opinion pages of the newspapers. Yami people who have written articles on the nuclear waste site and national park have been unable to publish in large newspapers and instead have to publish in church publications. While the Yami have attracted support from environmental groups, much of Taiwan, subject to government-controlled media, remains largely ignorant of the Yami people's situation.

Taipower, of course, tries to discourage opposition to its radwaste storage facility. Taipower claims to contribute NT\$1,500 (US\$60) to Orchid Island for every container of rad-

waste shipped there. Much of this support is in development of infrastructure, schools, housing and other community support. But it also includes individual benefits, such as government jobs, scholarships, travel awards, free food handouts and other incentives. On Orchid Island, where average income is low and jobs are scarce, these handouts are hard to refuse. But these benefits carry the unspoken stipulation that those who receive them should not speak out against Taipower's storage facility, or their funding could disappear.

Another intimidation tactic that the government favors is to send representatives from various government bodies (Taipower, the police, the military, census bureaus, etc.) to visit and present gifts to the more vocal opposition members. The underlying message is obvious: "We're watching you." For this reason, the people on the east side of the island no longer will accept handouts from the government. Chung Jia-shan, a Yami church elder and labor coordinator who now lives on Taiwan, explains the helpless feeling of the Yami people, "We Yami never know what the government's intention is. They always seem to have some hidden requirement for us. It's as if they say, 'We'll build you a house, just accept the radwaste site in the backyard.'"

But despite such intimidation by Taipower, the Yami opposition remains remarkably unified. Kuo Jian-ping points out that the Yami anti-nuclear movement is far stronger than in other places because of their tribal unity and the means by which the nuclear waste has been forced upon their homeland by another culture.

One of the most respected Yami elders is 66-year-old Saven Pavinen. Educated by the Japanese when they controlled Orchid Island, Saven Pavinen served for many years as the head of his village. He recently made this comment concerning the March protests the Yami held at the Legislature and Interior Ministry in Taipei:

"If we bothered people, if we kept them too busy, if we allowed them no rest, we apologize. In our culture, this is not normal behavior. But we have no choice.

"If we had been beaten there, if we had been killed, we were willing to die there. Because we love our island, and we don't want to see it ruined. For this, we are willing to die." ☉

ANCT Representatives Visit Orchid Island

In mid-April, ANCT representatives visited Orchid Island. Here we would like to focus on our impressions at the Long Men nuclear waste storage site.

Upon entering the storage facility, one sees a radiation detection meter above the front entrance. On both days we visited the site, this meter was not working. This was a contrast to the very visible meter at the airport, located above the entrance door. The airport meter is misleading because it would be almost impossible for the air at the airport, seven kilometers from the dumpsite, to show high radiation levels. The real threat to Orchid Island is the possibility of irradiation of the waste water which flows through the waste site. Rainwater drainage will carry radiation into the sea, and this will happen more and more as the concrete begins to crack and separate and the containers become increasingly corroded.

While touring the site, we noticed that the concrete lids on the trenches were not as thick as we had read that regulations stipulate. The original design called for lids of 25 cm thickness. Because concrete slabs that thick would be too heavy, this was revised during construction to 17 cm. But we estimated the lids to be only about 12.5 cm thick, half of what the original design stipulated.



Radioactive nuclear waste from Taiwan being unloaded on Orchid Island. Workers nearby without protective clothing would be in danger in case of an accident. (photo: CDK)

We also saw that the lid on one trench was not even closed securely. A stone was propping up one corner of the lid, and two sides were not sealed. Nuclear engineers have confirmed that this violates safety procedures because it allows radioactivity to escape into the atmosphere, and because moist air is allowed into the trenches, speeding up the corrosion of the storage containers.

(continued on page 4)

Where Will We Put It? THE FUTURE OF TAIWAN'S NUCLEAR WASTE

In the last two years, the Atomic Energy Council (AEC) and Taipower have been re-evaluating the disposal of radioactive waste. The combination of the resolute Yami opposition and the increasing awareness in Taiwan and abroad of the Yami's plight has led the government to consider other options. The evaluation process has been largely kept from the public, and reports issued by the government have often been contradictory.

In April, 1991, Hsu Yi-yun, chairman of the AEC, said during questioning in front of the national legislature that the Orchid Island site would close in 1992, after which the radwaste would temporarily be stored on site at each nuclear plant until a permanent site was found. Hsu said that the storage capacity at the nuclear plants could accommodate ten years of nuclear waste production. Later in 1991, the AEC said the Orchid Island site would close and all the radwaste be removed by 1996. (To this day, many Yami still believe that 1996 is the year the storage site will be removed.) In June of last year, AEC Radioactive Waste Management Division chief Tsai Chao-ming announced that a permanent site would be selected by 1996, and would begin operations in the year 2000. And on February 25th of this year, Tsai announced a new schedule under which the new site won't open until 2002. The AEC has formed a 16-member committee to search for a suitable site, and will select three sites by the end of this year. In 1996, they'll make a selection and hopefully begin construction in the same year.

Because of the delayed schedule, Taipower is planning to build six extra trenches at the Orchid Island storage site, which will increase the total capacity to 120,000 containers. The new trenches will be built in an area designed for only the 23 original trenches and will be slightly larger than the original ones, increasing the storage density even higher and bringing the accident risk higher as well.

Approval to build the new trenches has not yet been granted by the AEC. There is dispute with the Yami and anti-nuclear forces in Taiwan over the legitimacy of the expansion plan. Taipower in 1991 had agreed to the Yami's request to not continue

with the next phase of construction of the storage site. Now the Yami say they are prepared to declare war if Taipower proceeds to build further. At legislative budget hearings in April, Taitung legislator Kao Tian-lai asked AEC chairman Hsu whether Taipower would be allowed to proceed with its expansion plans. Hsu responded clearly, "We will not allow them to build." This statement, however, was not supported by AEC Radwaste Management Division chief Tsai Chao-ming at a hearing on May 13, when he said that the AEC would make a decision on the Taipower proposal in June.

The government has not made clear when the Orchid Island storage facility will close operations. If it continued until 2002, additional expansion of storage area would be required.

To the Yami, these recurring changes aren't just delays; they are more broken promises. There is a recurring pattern in Taipower's and the AEC's announcements to appease the Yami, the public and the national legislature - and then later changing the policy, extending the deadlines.

The government terms the waste site "temporary" and still claims that the waste will be removed from the site. But is this really technically and economically feasible? The costs would be enormous and the safety hazards substantial. The high average temperature and humidity of Orchid Island, combined with the effects of saltwater, could result in the corrosion and breakdown of twenty-year old containers, and make leakages a serious possibility. This has already happened, in fact, with radioactive contamination leaking into the waste water system in February, 1991. The Yami, therefore, fear that "temporary" may become permanent. They suspect that now that ocean dumping is not an option, the government is unwilling to admit that they are resigned to keeping the waste on Orchid Island.

The Yami fears are confirmed by Taipower's plan to spend NT\$200 million (US\$8 million) to build a park and recreation center atop the storage area. If the government really intended to move the stored waste, would they bother to cover it with dirt, grass and trees? (continued on page 5)

ANCT Visit to Orchid Island Waste Depository (cont. from page 3)

Word Games

We were told of Taipower's expansion plans for the Long Men storage facility by Mr. Cheng, assistant manager of the site. Because the facility will reach capacity next year, Taipower has proposed to spend NT\$200 million (US\$8 million) on building six more trenches adjoining the existing 23 trenches. (Another NT\$200 million is to be spent on covering the existing trenches with grass and trees.) This plan contradicts the agreement Taipower made with the Yami in 1991, in which Taipower promised not to proceed with construction of the second phase of the storage site. To get around this, Taipower is claiming that the six new trenches are an addition to "Phase One"

In truth, "Phase One" and "Phase Two" are just semantic games used to fool the Yami into accepting the construction. The first phase of development was completed eleven years ago, and its design did not include the six extra trenches. By definition, any further construction today constitutes a "second phase," regardless of its location. Taipower's word games haven't fooled the Yami people, though, who are watching carefully for any action which would indicate expanding of the site.

When asked about Yami opposition to the expansion, Mr. Cheng explained that Taipower is "communicating" with the Yami people about this.

Karaoke At the "Fish Cannery"

There have been rumors of building a park atop the waste site for a long time, but we at ANCT had always been skeptical of their validity. No longer. During our visit, we were told by Mr. Cheng that after the "greening" (beautification) of the original storage area, Taipower plans to take down the surrounding wall and build a recreation center on the site, with a park, tennis courts, karaoke and other facilities. The whole project will cost NT\$200 million (US\$8 million).

On all of pristine Orchid Island, to locate a recreational facility on top of the radioactive waste site seems beyond the pale of believability. The reason, though, is quite clear: if Taipower can attract some of the Yami people to use recreational facilities on the site, they can drive a wedge into Yami opposition to the site.

Another threat to the safety of the storage site comes from the military. The dumpsite directly faces Little Orchid Island, an uninhabited isle which is used as a bombing target range by the Taiwan air force. Yami fishermen in canoes too small to be seen from the air have come close to being killed by errant bombs. There is the possibility of an errant bomb landing near the nuclear dumpsite. And the Yami also worry that the explosions on Little Orchid Island will speed the deterioration of the concrete storage trenches. ☺

The Future of Taiwan's Nuclear Waste (continued from previous page)

The Search for a Permanent Disposal Site

The other major question is the location of the permanent disposal site. For this, the government is considering three alternatives: a location on Taiwan; on an outer island; or international cooperation, by which Taiwan would send its waste to another country. All of these present large obstacles. Taiwan's population density is among the highest in the world and the only remote areas are mountainous, where researchers say that it is geologically impossible to find a sound site. Furthermore, transportation, construction, weather and landslides all would be hazardous. And a high elevation site allows any leakage to affect towns and cities below. The radioactive waste would also have to be transported overland by truck through high population areas. The opposition to any proposed site on Taiwan island would be enormous. As a result, the selection committee has to work in secrecy, and members' names are not revealed so as to avoid receiving pressure from outside interests.

Most of the other islands belonging to Taiwan are either inhabited, too small or their ownership is disputed with other countries in the region.

Sending the nuclear waste to other countries is also an unwieldy proposition. Taiwan is presently searching for locations in Southeast Asia and Russia. But most of their discussions have come with mainland China, the most logical partner because of its proximity, vast land resources, common language and cultural identity. China stands to gain politically by representing itself as the mother country taking care of the problems of Taiwan, which China still considers a Chinese province. What Taiwan has to of-

fer to China and other countries is money. But how much money would it take to make other countries consider taking Taiwan's nuclear garbage? Negotiations with China have been on and off for several years. Last year at one point China refused any deal and cut off negotiations on the matter. Taiwan, too, has reservations about a deal with mainland China because they are concerned that China will use radioactive waste materials to produce nuclear weapons, and because they don't want to become too reliant on China, considering the unstable relations between the two countries.

There is no simple answer to the radioactive waste disposal problem that the government faces. Locating a site on crowded and mountainous Taiwan would meet stiff opposition and thus be politically hard to achieve. To date, no other islands belonging to Taiwan have been found suitable. And the government now has to face up to the injustice it has forced upon the Yami people. Sending the waste to other countries - even to China - is a complex and unwieldy proposition. AEC chairman Hsu has said that a disposal site only requires several square kilometers of space to handle all the nuclear waste produced by Taiwan. In this case, the easiest place to store the waste would be on-site at the nuclear plants, each of which has sufficient area to accommodate storage facilities.

But this solution, too, is only temporary. In the long run, can Taiwan find an acceptable method to dispose of its nuclear waste? Or will it have to resort to military force to keep sending the waste to Orchid Island? Before Taiwan commits to building another nuclear plant, it first must resolve this question. ⊕

Recurring Accidents Put Damper on Plans for a Fourth Nuclear Plant

The succession of accidents at Taiwan's three nuclear plants this year is putting a major crimp in the Taiwan Power Company's effort to preserve its plan to build nuclear plant No.4. All six of Taiwan's commercial nuclear reactors have experienced accidents in the first five months of this year, 64% of them due to human error, according to the AEC. While the frequent accidents have yet to create major environmental damage, they have raised public doubt about the ability of Taipower to operate nuclear plants safely. With each succeeding accident, the movement to freeze the budget for the proposed fourth nuclear plant is building strength.

The China Times reported that when news of the leakage of radioactive waste water at plant No.3 spread to the AEC on April 30, many AEC employees shook their heads and sighed, "No.4 (nuclear plant) is gone." AEC control personnel had already been frustrated with the recurring faults at Taipower's nuclear plants. Following the exposure of three workers to high levels of radiation at plant No.2 in late March, AEC control division chief Huang Ching-tung ordered the No.3 plant to increase security, so as to avoid further accidents caused by human error. He probably didn't realize how prescient his warning was. ⊕

(The following table is based on statistics provided by the Taiwan Power Company and reported in the Taiwan press.)

1993 DATES & LOCATION	ACCIDENT DESCRIPTION
1/1 - Plant3, Reactor2	Scram due to loss of electric supply
2/3 - Plant3, Reactor1	Scram due to low water level in steam generator
2/6 - Plant3, Reactor1	Scram due to short circuit caused by water leakage
2/15 - Plant1, Reactor2	High pressure in reactor; emergency stoppage
3/18 - Plant2, Reactor1	Scram due to main fuse switch being shut down
3/21 - Plant2, Reactor2	Workers exposed to high levels of radiation when fuel rods dipped into water
4/29 - Plant3, Reactor1	5,000 gallons of radioactively-contaminated water leaked into the sea
5/9 - Plant3	Fire caused by discarded cigarette butt
5/22 - Plant2, Reactor 1	Scram due to human error (unspecified)
5/24 - Plant2, Reactor 2	Scram due to human error (unspecified)
5/29 - Plant1, Reactor 2	Scram caused by foreign metal parts left behind by workers after maintenance
6/2 - Plant1, Reactor 2	Worker died after falling from 5th floor, reason unknown
6/6 - Plant1, Reactor 1	Scram due to human error (improper operation)

THE FOURTH NUCLEAR PLANT

Everybody Vying for a Piece of the Pie

The fourth nuclear plant project presents an enormous draw to the global nuclear industry. The estimated budget of US\$6.5 billion has attracted attention from bidders and governments of many countries. Bidding for the fourth plant, which is to be located at Yen Liao, on the coast east of Keelung city and Taipei, opened in January.

Reports in December indicated that Taiwan had eliminated potential bidders from Korea and China for political reasons (Korea had just broken ties with Taiwan to re-establish relations with China.) In January, Taipower chairman Chang Sz-min announced that four companies had passed Taipower's initial approval and could join the bidding for the design and construction contracts. They were: General Electric Company and Westinghouse, both from the U.S.; the French company Framatome; and the Swiss/Swedish consortium IBB Combustion Engineering Company. In the last four months, Taiwan media reports on the bidding have focused on the U.S. and French competitors. Taipower, however, has quite successfully kept details of the bidding process out of the media, and the picture has been quite vague. Thus, we at ANCT were quite surprised to read a report in Tokyo's Daily News that Toshiba and Hitachi were teaming up with General Electric in a joint bid proposal to build Taiwan's fourth nuclear plant. Further, the report mentions the other bidders as follows: a joint proposal between Westinghouse and the UK's Nuclear Electric Company's; a joint proposal between Framatome and Germany's Siemens; Switzerland's ABB Atom; and a fourth bidder not mentioned (it could be the above-mentioned IBB Combustion Engineering). This was the first news we in Taiwan had seen of these joint proposals.

The most visible bidding competitors so far have been the French and American companies. Newspapers have described them as being locked in a seesaw battle. Each has their own advantages in the competition. France hopes to capitalize on the blossoming political relationship it has built with Taiwan based on its sale of 60 Mirage 2000 fighter jets to Taiwan in January.

The French feel that they stuck their necks out on Taiwan's behalf, knowing that China was likely to enact economic reprisals against France for the sale of weapons to Taiwan, which Beijing still considers part of China. (China several months ago indeed did announce economic penalties against France.) Now France is pushing Taiwan hard to reciprocate by granting them the nuclear plant construction bid.

The Americans, on the other hand, have tradition on their side. Taiwan's previous nuclear plants have all been built with American technology, and technology transfer thus would favor the U.S. because Taiwan could apply it to their other facilities. Many of Taipower's employees have been trained in the U.S., and are more fluent in English than in French. An Independent Evening News report pointed out that American equipment is more complete and parts easier to get, although that may be changing as the nuclear industry in the States is slowing down. Another reported problem for France is that French banking laws are more problematic for Taiwan.

Taipower and the Atomic Energy Council have made the fourth nuclear plant a major element in the development of Taiwan's nuclear industry. Accordingly, Taipower has stipulated the following bid proposal conditions: The bids must: include technology transfer (valued at no less than 10% of the contract cost); allow industrial cooperation; and advance the development of Taiwan's electric and nuclear industries. Taiwan also states that because of the size of the project, the basic negotiating principle is government-to-government. France and the U.S. are less willing to admit this, even though their officials have been in Taiwan to discuss the project.



We would like to request our friends and fellow activists in other countries to keep an eye out for news regarding Taiwan's bidding process. Taiwan's media remains quite restricted regarding nuclear issues, and as the Japanese report reveals, overseas news may be more complete than what we can find here. ☺

1993 Anti-Nuclear Movement Aims To Freeze the Budget for the Fourth Plant, Create a Nuclear-Free Home

When the budget for Taiwan's fourth nuclear plant passed through the national legislature last November, many thought it marked the end of more than twelve years of political battles in the government over this proposal. Six months later, however, it is clear that the war is far from over. Following the legislative approval, Taiwan's anti-nuclear movement regrouped and is now much stronger and more unified than it was a year ago. The movement has been holding a series of demonstrations and public hearings aimed at convincing the public and the legislature to freeze the project budget. The legislature has already voted to re-examine the budget that was passed last year, and will vote again on its approval in June.

A major factor stimulating the movement against the #4 plant was the legislative election last December. The first-ever full legislative election held in Taiwan, it brought many more opposition members into the legislature. It is believed that they, along with independents and anti-nuclear members of the ruling KMT party, may make a majority which can freeze the new plant's budget. The fifty-one members of the opposition Democratic Progressive Party (DPP) have pledged to devote full efforts to freezing the budget, and the DPP has set up a nine-member legislative task force for that purpose.

This year's anti-nuclear demonstrations began in January with a protest at the proposed site for #4 and has continued with public

hearings, and protests at the legislature and other government branches. The movement has received support by coordinating their protests with related issues such as nuclear waste disposal and the irradiated rebar cases. The protests, coordinated largely by Taiwan Environmental Protection Union, but including the support of numerous environmental groups have been well-coordinated and have garnered increasing support. To mark the seventh anniversary of the Chernobyl disaster on April 26, demonstrators marched to the Presidential Office Building where they cooked up a barbecue with seafood caught in the waters off the first and second nuclear plants. (President Lee Deng-hui did not accept their invitation to dinner.) The most recent protest was on May 30, when 5,000 people marched in a demonstration against the fourth nuclear plant.

Feeling the opposition heat, Taipower on March 12th reassembled its Nuclear Energy Communications Committee, which was disbanded after the budget passed last year. The Committee's purpose is propaganda and lobbying of legislators to support the #4 project.

Both sides are pointing toward the June legislative budget decision. A group of university professors have set up camp in front of the legislature building and vow to stay until the legislature freezes the budget. ☺

NEWS

Radiation Leaks Into the Sea at Plant #3

On the morning of April 29, after a week of preparations, operators at the #3 nuclear plant on the southern tip of Taiwan started the process of replacing the fuel in the #1 reactor. Seven minutes after turning on the filtering system for the replacement pool, an operator discovered that the system was leaking water into the plant's waste water system. Before workers could contain the leak, 5,000 gallons of contaminated water had flowed into the outlet pipes and drained into the sea near the beach resort of Kenting on Taiwan's southern tip.

Officials at the #3 plant reported the incident to the Atomic Energy Council (AEC) that afternoon, but failed to notify the local government of Hengchun nor the several hundred swimmers near the outlet.

Taipower and the AEC followed up with environmental testing which showed radioactivity levels of 0.23 curies in the waters of Nan-wan Bay, within allowable limits, according to Taipower. Tests inside the plant control area showed amounts of Cobalt-58 over 100 times above normal, though.

In the week following, the Taiwan Environmental Protection Union, suspicious of a cover-up, sent specialists to check the local area for contamination. Their report found that the leaked water was from the reactor core, and they estimated that 100,000 gallons had leaked into the sea, not just 5,000 as Taipower had claimed. Furthermore, their results from tests of sand and water near the waste water outlets in some cases showed levels over 10,000 times higher than the AEC reported.

TEPU and local government officials accused Taipower and the AEC of covering up the seriousness of the situation. The assistant general manager of the #3 plant later admitted that the plant's reaction was too slow, and that the slow reaction caused the radiation to spread further.

TEPU pointed out that Taipower's failure to notify the nearby swimmers and residents before they knew how badly the water was contaminated makes a mockery of the millions of dollars spent on nuclear accident drills last year.

On May 13, the AEC released a report stating that the incident was clearly caused by human error, and that the basic training of workers was inadequate. The report demanded that Taipower improve training of nuclear plant employees at all levels.

Workers' Exposure at Plant #2

Three Taipower workers were exposed to very high amounts of nuclear radiation when fixing a power generator in the #2 nuclear power plant in March.

In the incident, which is considered a 3rd degree accident by IAEA standards, the workers were exposed to levels of radiation up to 29.99 REMs (roentgens equivalent, man). This exceeds the yearly amount that nuclear plant workers may be exposed to (5 REMs/year) by six times. People exposed to more than 10 REMs are required to undergo 3 days of emergency examination and treatment.

The three were rushed to the hospital, where all radiation contamination test results proved negative. But the most seriously-affected of the workers, Chang Jian-yi, will have to return for testing at least ten times in the next year for intensive training, to determine whether the radiation exposure will do gradual harm.

Fire at Nuclear Plant #3

A fire caused by a cigarette butt discarded by a worker on the grounds of the third nuclear plant caused near-panic among residents in the area. The fire, which came within 500 meters of the reactor structures, lit up the entire area and the smoke prevented people from seeing whether the fire was located in the

reactors. Local fire departments were able to control the blaze within three hours.

Taipower Asst. General Manager resigns

Mr. Lin Ying, assistant general manager of the Taiwan Power Company, resigned on May 25, claiming responsibility for the numerous accidents and safety violations at the three nuclear plants this year. Lin had set a performance goal of just one scram per year at Taiwan's nuclear plants. But following 2 scrams in 3 days in late May at the #2 plant, he resigned, and the resignation was accepted. Anti-nuclear opposition leaders suggest that Lin is just a scapegoat, and demand the resignation of Taipower's general manager and chairman.

5,000 Join Demonstration Against Plant #4

Five thousand people from various social groups and walks of life joined the "Push to Freeze the #4" demonstration on May 30 in Taipei. The protesters marched past the radioactively-contaminated Min Sheng Villa apartments on the way to the Administrative branch and the Legislature, where the march concluded. The demonstration was organized by the Taiwan Environmental Protection Union, and included numerous environmental, civic, academic, medical, labor and political organizations. A contingent of about thirty Yami people came from Orchid Island. They came dressed in loincloths and "battle gear" to show their commitment to fight against nuclear expansion. Representatives of the areas near the existing nuclear plants and the proposed fourth nuclear plant came to protest. Residents from the contaminated Min Sheng Villa also joined for the first time. As with previous anti-nuclear demonstrations, many of the marchers were women and children, and the atmosphere was lively and colorful, featuring various kinds of costumes, artwork and dances by student groups and the Yami.

NRI Requests New Research Reactor

The Nuclear Research Institute in Taoyuan has submitted a proposal for a NT\$7 billion (US\$280 million) nuclear research reactor.

The institute claims the research reactor is necessary because it will increase the quality of nuclear research, and will be important to the development of Taiwan's nuclear industry.

But the proposal met with rapid criticism from Taiwan nuclear experts. Professors from the Atomic Science Institute pointed out that research reactors are shutting down all over the world and there is no developed nation planning to build another one.

Hengchun Demands Compensation for Underground Water Use

The #3 nuclear power plant has been in dispute for months with the local government of Hengchun over the plant's drawing of underground water in the area for its cooling system and other uses. The nuclear plant's pumping of underground water leaves local farmers without enough water for adequate irrigation, and the Hengchun government is asking for compensation for millions of dollars of crop losses. Hengchun is asking for US\$6-8 million in compensation, but Taipower is only offering US\$3 million. So far, the issue has not been resolved.

7000 kg of U-238 Stored at NRI

Public discovery was made in April of seven thousand kilograms of Uranium-238 stored at the Nuclear Research Institute in Taoyuan. Lawmakers and others questioned whether the uranium was to be used for nuclear weapons research. When asked, the director of the institute said that the U-238 was to be converted into fuel for the commercial nuclear plants. ☉

IRRADIATED REBAR

Over 50 Contaminated Buildings Discovered

The Atomic Energy Council (AEC) has discovered over 50 radioactively-contaminated buildings in northern Taiwan in its investigation into the irradiated housing issue, according to news reports.

The discoveries are based largely on results from thousands of TLD radiation-sensitive badges which were issued to residences and other structures constructed between 1982 and 1985, when the irradiated steel building materials appear to have spread.

The AEC also has identified four construction companies and three steel producers that were sources for the irradiated metal. AEC officials say a large quantity of the contaminated reinforcing bar (rebar) came from a steel factory in Taoyuan county.

The AEC has passed the results of the investigation on to the Taipei district attorney's office for further investigation. So far, the investigation has been limited to the northern part of Taiwan, but reports indicate that the AEC is planning a testing program for at least 10,000 additional buildings that will take five years and cost US\$25 million.

The AEC had previously announced that systematic investigation of iron and steel factories would begin in July to prevent further spread of contaminated metal. Domestic steel will be

inspected at each factory, and imported steel will have random inspections.

In the last issue, we reported on the irradiated Taiwan steel shipped to the U.S. in 1984. The steel pipe fittings were discovered to be contaminated upon entry to the U.S. and promptly returned to Taiwan. The AEC completed its investigative report on the matter in 1986, but did not announce it publicly. (The report shows that batch of steel had much lower radiation levels than the rebar discovered in the last year.) The AEC failed to follow up by examining steel producers for irradiated steel sources, nor did it establish procedures to avoid the spread of irradiated materials into the Taiwan market. Not until the contaminated buildings were discovered last year did the AEC begin to implement preventive measures.

While radioactively-contaminated buildings and products have been discovered in other countries, those discovered in Taiwan are far more serious. At least five discoveries of contamination have been made in the U.S. in the last fourteen years, and the U.S. has spent millions of dollars on clean-up and compensation. Taiwan may have to spend much more to settle its far more serious cases, although so far the AEC has shown little commitment to do so. ☐

Min Sheng Villa Residents Sue AEC for Neglect of Responsibility

Months of negotiation have produced little progress toward a solution to the question of compensation for the radioactively-contaminated Min Sheng Villa apartments in Taipei. Dissatisfaction with the terms of the Atomic Energy Council's (AEC) offer to buy back the apartments, and increasing evidence that the AEC had known about the contamination years before but had covered up the case has led the Min Sheng residents association to file a lawsuit against the AEC and certain AEC officials for neglect of duty.

Min Sheng Villa is one of some 50 buildings discovered in the last year to have been built with irradiated steel reinforcing bar (rebar). Of 70 apartments in the building, 34 are exposed to levels of radiation over 1.5 REMs per year. (The UN's International Atomic Energy Agency suggests civilian exposure should not exceed 0.2 REMs per year.) The building's highest exposure level is over 400 REMs per year. Over the nine years since the building was constructed, the cumulative exposure levels pose a great threat to the residents' health.

Only 15 of the 34 families living in the seriously-exposed residences have been able to afford to move out. The others are waiting to reach fair compensation with the AEC.

"We worked a lifetime to buy these homes, said one resident. "What will we do when our children get cancer?"

In April, following months of negotiations in which the AEC refused to rebuild the apartments, the AEC gave residents of Min Sheng Villa an ultimatum: sign the contract offer by April 24 or the AEC would take back its offer to buy the apartments. Of the 34 residences which met the standard for compensation of levels of radioactivity exposure exceeding 1.5 REMs per year, only six agreed to accept the government's terms. The AEC then officially closed its investigation of the case, and further action will be handled in court.

AEC Contract Offer Forbids Suing AEC Officials

The other 35 residents remain adamantly unified against one main point in the AEC's contract offer. Inside the contract were clauses forbidding the Min Sheng Villa residents or their relatives to sue the AEC or its employees for any damages caused by radiation exposure. Other, smaller, differences existed, but this

clause was the main sticking point. Basically, the AEC is trying to protect itself and its employees from lawsuits.

Residents justifiably feel that the AEC should assume responsibility for allowing rebar to spread. They feel they should be entitled to not only fair compensation for their homes but also medical insurance and compensation for future health effects of the radiation they have been exposed to for the last nine years.

They also accuse the AEC of covering up an investigation after detecting unusually high background radiation in the walls of a dental clinic in the Min Sheng Villa in 1986. The AEC claims this was an administrative mistake, but evidence that the AEC had sent a letter to Wen Pu Construction Company, the builder of Min Sheng Villa, requesting examination of irradiated rebar shows that the AEC was aware of the problem and its source. One of the major points in the Min Sheng Villa lawsuit is that the AEC knowingly allowed the residents to be exposed to an additional seven years of hazardous radioactivity.

Japan's NHK Profiles Min Sheng Villa

The Japanese television network NHK recently broadcast a half-hour special on Min Sheng Villa and the radioactively-contaminated housing problem in Taiwan.

Radiation specialists interviewed by NHK stated that, of people exposed to radiation at levels found inside Min Sheng Villa, 36 of 10,000 could be expected to die from radiation-caused cancer. A nuclear engineering professor who was invited to accompany the NHK team found radiation levels 1500 times higher than normal background levels.

NHK interviewed AEC chairman Hsu Yi-yun about the source of radiation in the rebar, which is suspected to come from Cobalt-60 used in medical or sonar equipment which was mixed into scrap metal and recycled. Hsu explained, "About twelve years ago, the AEC began to control irradiation sources. But before that time we had no way of knowing where irradiated metal was going."

Residents of Min Sheng Villa and other critics say that the AEC should have been controlling radiation sources at that time and should now assume responsibility for its past neglect. ☐