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## Lessons from the Chuetsu-Oki Earthquake



Cartoon by Shoji Takagi

### Summary of a conversation between Baku Nishio and Chihiro Kamisawa

**Nishio:** On August 10 TEPCO released some operational data showing the Kashiwazaki-Kariwa nuclear power plant's (KK) behavior during the Chuetsu-Oki Earthquake. TEPCO claims that the data shows that the plant shutdown and cooled down successfully and that containment was maintained.

**Kamisawa:** One interesting thing about the **automatic shutdown** was that it was triggered not by the violent horizontal shaking, but by the vertical shaking which preceded it. It appears that it scrambled in response to the "primary wave", rather than the "secondary wave" that followed. The secondary wave is larger than the primary wave, so it could be said that it was lucky that the reactor scrambled before the secondary wave arrived. If it had not done so, the control rods might not have inserted properly.

**Nishio:** What about **removal of heat from the core?**

**Kamisawa:** Unit 2 had not yet reached criticality.

Cooling itself was not a problem, but the pump to pump out water from the coolant cleanup system was not working, so the water level continued to rise. The main steam safety release valve then opened, and the water level dropped suddenly. The reactor coolant water level had to be restored by manually operating several pumps, including the low-pressure core spray pump in the Emergency Core Cooling System.

In Unit 7, the boiler for maintaining the vacuum in the condenser stopped because of the earthquake. Cooling had to be maintained using the main steam safety release valve.

Manual operation was necessary because of the continuing aftershocks, so it must have been a fairly hair-raising experience for the operators.

**Nishio:** It was reported that the 30 sleepless workers in the emergency response room clapped spontaneously when at 6:54am on the morning of the 17th, the day after the earthquake struck, they finally got the reactor temperature of Unit 4 below 100 degrees C. It must have been a great relief. However, for 2 hours the hotline from the Unit 4 emergency response room to the fire department and the emergency fax line to the central and local governments were inoperable. Apparently for those 2 hours the car park behind the building was used as a response headquarters.

**Kamisawa:** The main office building is not

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required to meet the stringent earthquake resistance standards of some other buildings, but if it is out of action, it is impossible to make overall judgments, so confusion reigns.

*Nishio:* What about **containment of radioactive materials**? TEPCO says that no radioactivity leaked from fuel assemblies.

*Kamisawa:* That has not yet been confirmed. Radioactive water from the spent fuel pool of Unit 6 leaked to sea. Iodine leaked from the exhaust stack of Unit 7. A pressure release window in the reactor building of Unit 3 fell out. So it can be said that several layers of the multi-layered containment were breached.

*Nishio:* So if the fuel assemblies did leak, there were routes via which the radioactivity could escape.

*Nishio:* Promoters of nuclear power have begun to claim that the fact that KK withstood a stronger than predicted earthquake proves the **safety of nuclear power plants**.

*Kamisawa:* The crane in Unit 6 was damaged. The inside of the reactors is yet to be checked. Plastic deformation (permanent strain) and cracks might be discovered. There is certain to be residual strain in much of the equipment and this could cause a major accident in future.

*Nishio:* Some people claim that this all falls within the leeway built into the design of the plant, but did this exceed any such leeway?

*Kamisawa:* This time they were just lucky. Besides which, the size of the shake is not the only determining factor for damage to equipment.

*Nishio:* Even if on this occasion the design error worked in their favor, the design error might work against them next time.

*Kamisawa:* They don't really think this proves that nuclear power plants are safe. Rather, they are just trying to distract attention from the fact that the flaws in the safety assessment have been exposed.

*Nishio:* The earthquake exceeded the assumptions of the safety assessment, but **was an earthquake of this magnitude really unexpected?**

*Kamisawa:* Not at all. A reanalysis by a team including Professor Takashi Nakata of Hiroshima Institute of Technology showed that a fault on the sea bed which TEPCO estimated to be only 7 kilometers, is in fact in the order of 30 kilometers long. TEPCO and the government's safety assessment system should be held accountable for

this gross underestimate.

*Nishio:* Whether it was deliberate or accidental, it was a serious oversight. But there are still many things that are not yet known about earthquakes. The direction of the fault along the sea bed is not certain.

*Kamisawa:* There are differences of opinion about whether it becomes shallower as it approaches land or as it goes out to sea. Some people think it branches. If it becomes shallower as it approaches land, running in the north-west direction, it comes within a few kilometers of the plant. In fact, there is a strong argument that it goes right under the plant and connects with the Torigoe fault.

*Nishio:* The term "killer pulse" has been used by Emeritus Professor Kojiro Irikura of Kyoto University.

*Kamisawa:* This refers to a powerful pulse arising from the release of regions which were stuck. This mechanism is not currently taken into account in safety assessments. But even without resorting to this theory, Mitsuhsa Watanabe of Toyo University says the movement around KK can be accounted for on the basis of the 10-centimeter rise in the ground level.

*Nishio:* TEPCO's and the government's safety assessors might not have predicted it, but it was a perfectly predictable earthquake. They say they are carrying out **back checks on the basis of the new earthquake guidelines** established last September, but they should not be allowed to get away with saying this was beyond expectations.

*Kamisawa:* It is clear that the earthquake safety assessment for KK was flawed. Its license should be withdrawn, but they are proceeding on the assumption that it will be restarted. We must not allow this to happen. They say they are carrying out back checks on all of Japan's nuclear power plants, but any of these plants could be hit by an earthquake like the one that hit KK. They should all be shut down until the back checks are completed. If it is discovered that the safety assessments were flawed, their licenses should be withdrawn. Only then should the question of whether or not the new guidelines are valid be considered. Of course, all the data and the input values and calculation codes used in the analyses should be publicly available. If they say that safety has been confirmed, they should show the data on which they base their conclusion.

# IAEA Releases Report on Kashiwazaki-Kariwa

There were some misleading comments in the IAEA's August 17 report on the Kashiwazaki-Kariwa nuclear power plant (KK), as well as some sensible comments that the pro-nuclear lobby will try to ignore. Below is a response to some of the issues raised in the report.

## 1. "Expected" Damage

In its August 17 press release the IAEA states, "Earthquake damage to the Kashiwazaki-Kariwa nuclear power station on 16 July appears to be limited and less than expected."

*Response:* A similar comment made a few days earlier by the head of the "IAEA expert mission" has been quoted widely in the media. However it is a meaningless statement. It depends on what he expected. The comment is being used to diminish the seriousness of the problems.

## 2. Visible and Invisible Damage

The August 17 report states, "Safety related structures, systems and components of the plant seem to be in a general condition, much better than might be expected for such a strong earthquake, and there is no visible significant damage..."

*Response 1:* The key issue is the invisible damage. It is to be expected that the plant has been significantly weakened. Even if a visual inspection does not reveal any serious problems, the stresses and strains that the earthquake placed on equipment, pipes, etc. is likely to have caused invisible damage and general weakening. Practically speaking, it is impossible to confirm the extent of this damage and weakening.

The IAEA report acknowledges this issue as follows:

"Another consideration is the possibility that the long-term operation of components could be affected by hidden damage from the earthquake. Thus, the potential interaction between large seismic events and accelerated ageing may be an important topic to consider in future inspection programmes."

*Response 2:* The insides of the reactors have not been seen yet, so it is premature to pass judgment on the condition of the plant.

The IAEA report acknowledges this issue as follows:

"However, important components like the reactor

vessels, the core internals and the fuel elements have not yet been examined and in-depth inspections are still to be performed."

## 3. Seismic risk

(i) Even if the plant withstood this earthquake, there is no guarantee that the plant, which has been weakened by the July 16 earthquake, will withstand the next earthquake. Furthermore, the next earthquake could be even bigger.

(ii) It now seems that the Kashiwazaki-Kariwa nuclear power plant is located directly above a seismic fault.

The IAEA August 17 press release acknowledges these issues as follows:

"In the IAEA report it is suggested that a re-evaluation of the seismic safety the Kashiwazaki-Kariwa NPP needs to be done taking into account the lessons learned from the Niigataken Chuetsu-Oki earthquake, using updated criteria and methods. In particular, detailed geophysical investigations are foreseen both on land and offshore in order to define the new seismic input to the plants. These investigations, it is stated in the report, should address the issue of the potential existence of active faults underneath the site."

## 4. Length of Shutdown

The media quoted the head of the "IAEA expert mission", Pilippe Jamet as saying that it would take "months or a year" to put the plant back into operation.

*Response:* Points 2 and 3 above are convincing reasons why the plant should never be operated again. There are no grounds for suggesting the plant can be restarted in a year's time. Nor are there any grounds for using the earthquake that hit the KK as evidence that nuclear power plants can withstand strong earthquakes.

CNIC, along with Green Action Kyoto and Greenpeace Japan wrote to the IAEA to protest the misleading aspects of its report. The statement by the newly formed *Group of Concerned Scientists and Engineers Calling for the Closure of the Kashiwazaki-Kariwa Nuclear Power Plant* on page 4&5 explains in more detail why the Kashiwazaki-Kariwa nuclear power plant should not be operated again.

Philip White (NIT Editor)

## Appeal

### Call for Closure of Kashiwazaki-Kariwa Nuclear Power Plant

On 17 August 2007, the International Atomic Energy Agency (IAEA) fact finding mission released its preliminary report on the impact of the 16 July 2007 Chuetsu-Oki earthquake on Tokyo Electric Power Company's (TEPCO) Kashiwazaki-Kariwa Nuclear Power Plant. The report, compiled on the basis of an investigation that lasted a mere three days, concluded that the plant shut down safely and that the damage was less than expected, even though as yet nothing is known of the condition of key equipment, including the reactor pressure vessel, reactor structural components and internals, and major piping systems. Meanwhile, Haruki Madarame, chairman of the investigation committee established by the Japanese government's Agency for Natural Resources and Energy, by stating that it will take at least 1 to 2 years before the plant can be restarted, lost no time in proclaiming that all 7 units will be restarted eventually. In this way, the belief that the Kashiwazaki-Kariwa Nuclear Power Plant is sure to be restarted is being implanted in the Japanese public consciousness. We find this state of affairs deeply concerning from a straightforward scientific and technical perspective. Our reasons are as stated below.

First, the possibility of occurrence of another huge earthquake near the Kashiwazaki-Kariwa Nuclear Power Plant cannot be ruled out. This region is right in the middle of the Uetsu-Shin'etsu fold zone, an area of particularly high crustal activity in the Japan Sea Eastern Margin Mobile Belt and has many active faults. Until the occurrence of the predicted Great Nankai (south sea) earthquake around the middle of this century, there is a high probability that a period of high earthquake activity will continue from the Japan Sea Eastern Margin Mobile Belt to central / southwest Japan (1). It is therefore impossible to say that large earthquakes in this region ended with the 2004 Chuetsu earthquake and the recent Chuetsu-Oki earthquake. Also, we cannot ignore the possibility that, even several to ten years from now, large earthquakes could occur as aftershocks, in the broad sense of the word, of the Chuetsu-Oki earthquake. The IAEA points to the importance of investigation of active faults, but it must not be forgotten that huge earthquakes, which are not related to active faults observed near the surface, could occur.

Second, in the light of the "Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities (Seismic Guide)," which was revised in September last year, it is clearly inconceivable to continue to operate a nuclear power plant at the Kashiwazaki-Kariwa site. The reason for this is that the basic policy stated in the revised Seismic Guide is that all buildings and structures must be installed on ground having enough support performance (2). There can be no doubt now that the ground of the site of the Kashiwazaki-Kariwa Nuclear Power Plant does not fulfill this requirement. This was proved by the damage to many structures at the plant as a result of large-scale, wide-spread ground deformations and failures caused by the Chuetsu-Oki earthquake.

Third, the ground motion due to the earthquake which hit the Kashiwazaki-Kariwa Nuclear Power Plant far exceeded the basic design earthquake ground motion S2 that was assumed when the plant was designed. There is virtually no doubt that the force applied exceeded the elasticity limit of the materials of equipment and facilities categorized as of seismic importance level A (important) or As (most important), including the reactor pressure vessel, the reactor internals, piping, the containment vessel, etc. Hence, even if the minimum functions of "shut down, cooling and containment" were somehow maintained, it should be assumed that plastic deformation (permanent strain) remains in many facilities and items of equipment and that in some cases cracks may have formed. The key problem is that it is impossible to demonstrably determine whether or not dangerous strain remains. All that is possible is to make a guesstimate by inputting the observed earthquake ground motion into numerical simulations, which use assumptions built on top of more assumptions (3). In other words, nobody can objectively claim that the 7 units are sound. As the IAEA has warned, there is a danger that the long-term operation of components could be affected by hidden damage from the earthquake. This does not simply mean that accidents emanating from within the reactor have become more likely. It also means that a major accident could be caused by earthquake ground motion smaller than that of 16 July 2007.

Fourth, we must take the following issues into serious consideration. To begin with, the local residents have kept saying for the last 33 years that the ground condition of the Kashiwazaki-Kariwa Nuclear Power Plant is of very poor quality and that there is a high probability of a major earthquake striking the area because there are several active faults nearby. This was finally proved to be true, at a huge cost, by the recent earthquake disaster.

Amidst this misfortune, the one fortunate thing was that on this occasion a major nuclear accident did not occur. However, that was the result of miraculous luck in regard to the way the earthquake occurred. If the source region of the Chuetsu-Oki earthquake had been just a little to the southwest and the magnitude had been in the order of 7.5 like the 1964 Niigata earthquake, the nuclear power plant would have been shaken even more violently. The functions of "shutdown, cooling and containment" might have failed and large quantities of radioactivity might have been released into the environment.

It is unacceptable for the above 4 points to be disregarded, nature to be treated with contempt, and pride in technological ethics to be cast aside just so that the Kashiwazaki-Kariwa Nuclear Power Plant may be reopened. Such a course would expose the local community, Japanese society, and indeed the whole world to serious danger.

It goes without saying that a detailed investigation of the damage to all the facilities, beginning with the inside of the pressure vessel, along with a scientific examination of the ground of the site must now be carried out. However, these should not be carried out on the assumption that the plant will be restarted. They should be carried out as objective scientific and technical investigations to deal with the post-event situation, maintaining the premise that the plant will not necessarily be restarted, keeping in mind the possibility of permanent closure of the plant. Furthermore, the investigation results should not be biased towards the government or the company. We believe that they should be assessed by impartial individuals who also respect the views of the local residents.

This is our fervent appeal.

21 August 2007

*Group of Concerned Scientists and Engineers Calling for the Closure of the Kashiwazaki-Kariwa Nuclear Power Plant*

*Steering members*

Katsuhiko Ishibashi, Seismologist, Professor of Kobe University

Hiromitsu Ino, Metallurgist, Emeritus Professor of the University of Tokyo

Mitsuhiko Tanaka, former nuclear power plant design engineer, science writer

Yukio Yamaguchi, Physicist, Co-Director of Citizens' Nuclear Information Center

## References

1. Such seismically active periods were observed before the 1854 Ansei-Tokai and Ansei-Nankai earthquakes and before the 1944 Tonankai and the 1946 Nankai earthquakes. Meanwhile, there is a view that the following earthquakes are all manifestations of a current active period: 1995 Hyogo-ken Nambu, 2000 Tottori-ken Seibu, 2004 Niigata-ken Chuetsu, 2005 Fukuoka-ken Seiho-Oki, 2007 Noto Peninsula, 2007 Niigata-ken Chuetsu-Oki.
2. The fact that it is "required for all buildings and structures" is clearly explained in Shigeki Nagura, Yosuke Maeda, Hideki Mizuma and Hiroyuki Aoyama's "Revision of Japanese 'Examination Guide for Seismic Design of Nuclear Power Reactor Facilities' " (Proceedings of the 12th Japan Earthquake Engineering Symposium, CD-ROM, 43-49, 2006).
3. Damage to facilities and equipment cannot be discerned by visual inspection alone. Even if the existence of cracks can, to some extent, be discerned by non-destructive testing technology used during periodic inspections, it is impossible to check every corner of all the "important" and "most important" equipment of all 7 units. Furthermore, practically usable technology does not exist for non-destructive testing in the cramped confines of a nuclear power plant to ascertain whether or not dangerous deformation has occurred. Consequently, we expect that checks will be restricted to confirming large deformations and damage which can be observed with the naked eye, limited non-destructive tests for cracks in a small number of locations, and estimations of whether dangerous deformation has occurred based on calculations. However, it would be extremely dangerous to restart the plant on the basis of the results of these uncertain calculations.

**Contact** for the *Group of Concerned Scientists and Engineers Calling for the Closure of the Kashiwazaki-Kariwa Nuclear Power Plant*:

The Takagi Fund for Citizen Science (Tamotsu Sugunami)

For English inquiries: Citizens' Nuclear Information Center

## Active Tests Recommence at Rokkasho

Since May 2006, Japan Nuclear Fuel Ltd. (JNFL) has been conducting "active tests" of its Rokkasho Reprocessing Plant in Aomori Prefecture. Step 3 of the 5-step tests was completed in April 2007, but in the same month it was discovered that errors in calculations of earthquake resistance had been covered up (NIT 118). The equipment in question included the fuel-shearing machine and spent fuel-handling equipment. As a consequence, the tests were put on hold.

Work to bring the problem equipment up to the required earthquake resistance standards took until August 17 to complete. Soon after the work was completed, on August 31, the governor and the mayor announced their "understanding" for recommencement of the tests and JNFL commenced step 4 forthwith. It is planned that vitrification of high-active liquid waste will be carried out for the first time during the second half of step 4.

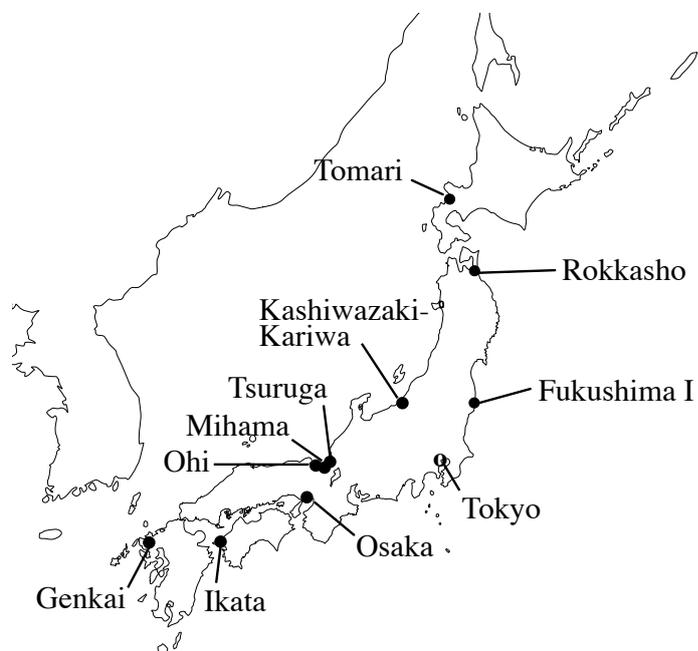
JNFL had planned to commence full operation of the plant in November this year. However, due to the revelation of the incorrect earthquake resistance calculation and the time taken to reinforce the equipment, the active tests are running way behind schedule. Hence, the date for commencement of full operations has been pushed back to February 2008. This is the eleventh time the schedule has been revised. Considering the time required for the government's inspection and the various political procedures involved, including those associated with safety agreements with the local and prefectural governments, even this schedule will be very difficult to achieve.

The delays in the commencement of full operations of the Rokkasho Reprocessing Plant have had a big impact on the finances of Aomori Prefecture and Rokkasho Village. Under Japanese law, if the active tests are not completed and the government's inspection has not been cleared by January 1, the plant, along with its machinery and equipment, is not recognized as an asset for the purposes of taxation under the fixed assets tax. Therefore, the prefecture and the village cannot include fixed assets income from the plant in their 2008 Fiscal Year budgets. The combined

lost income for the prefecture and village in FY2008 works out at about 14 billion yen. But the Rokkasho Reprocessing Plant is supposed to be a huge money-spinner for the local and prefectural governments, so they are under great political pressure to place a higher priority on the income that would be derived by commencing full operations than on the plant's safety.

Masako Sawai (CNIC)

Map of places mentioned in NIT 120



### Haiku for the season

*preaching life and death  
the great senior priest  
with a white fan*

by Rumi Kamishima

The color white is a seasonal reference to summer. September, when this haiku was written, is officially autumn, but the hot weather often continues well into September.

## Worker Exposure Data for 2006 and the Workers' Compensation Case of the Late Tadashi Kiyuna

### Worker Exposure Data

On August 20 the Nuclear Industrial and Safety Agency released data relating to worker radiation exposure and the management of radioactive waste at nuclear facilities for the 2006 fiscal year.

At nuclear power plants in FY2006 a total of 66,895 workers (8,632 electric utility workers and 58,343 subcontractor workers - people who worked at more than one plant are double-counted) received a collective dose of 67.43 person-sieverts (3.28 person-sieverts for utility workers and 64.14 person-sieverts for subcontractor workers). The average individual dose of 1.0 milli-sieverts (0.4 mSv for utility workers and 1.1 mSv for subcontractor workers) was the same as the previous year. Over 95% of the total dose was received by subcontractor workers. The highest individual dose for a utility worker (12.9 mSv) was received by a worker at the Fukushima I plant, while the highest individual dose for a subcontractor worker (19.7 mSv) was received by a worker at the Ohi plant.

In Japan, exposure is greatest for people who work for subcontractors. Moreover, these people often work at more than one nuclear power plant. In 1977 the Radiation Dose Registration Center was established for the purpose of accurately and consistently assessing and managing the dose of individual workers. It was established within the Radiation Effects Association, which is financed and managed by the electric utilities. It began recording data in 1980 and publishes the total yearly radiation dose and the number of related work places for each radiation industry worker.

According to the 2006 report, 25% of workers worked at two or more places. The average dose of people who worked at only one place was 0.7 mSv. The table below shows a strong trend for radiation dose to increase as people work at more places.

Relation between number of radiation-related work place and radiation dose						
Number of work places	1	2	3	4	5	6 or more
Average radiation dose (mSv)	0.7	2.0	2.9	3.4	4.2	3.1

### Workers' Compensation Case of the Late Tadashi Kiyuna

Tadashi Kiyuna worked at nuclear power

plants all around Japan, mainly at Pressurized Water Reactors, including Tomari, Ikata, Mihama, Ohi, Tsuruga and Genkai. He also worked at the Rokkasho Reprocessing Plant. His job was to check for radiation leaks. His total dose in just over six years from September 1997 to January 2004 was assessed to have been 99.76 mSv. He was a victim of the push to reduce costs through longer consecutive operation of nuclear power plants and shorter periodic inspections. His health got progressively worse until he was forced to quit in February 2004. In May that year he was diagnosed as having malignant lymphoma, a form of blood cancer. He died after great suffering in March the following year at the age of 53.

In October 2005 his family applied to the Yodogawa Labor Standard Supervision Office in Osaka for worker's compensation. The application was rejected in September 2006, without a sample being submitted for assessment by the central office, on the grounds that there is no precedent for accepting malignant lymphoma. Kiyuna's family appealed in October and the case is still being assessed. On June 8 this year, in the context of negotiations with the government over several radiation exposure issues, the Ministry of Health, Labour and Welfare agreed to reconsider Kiyuna's application for worker's compensation. Now the stage is set for the real negotiations to begin.

In Japan, approval of radiation-related workers' compensation for nuclear workers has been based on very narrow criteria. Until now, with the exception of Mitsuaki Nagao's multiple myeloma (see NIT 99), the only cases that have been accepted have been for leukemia. It would be a great step forward for workers' compensation for Japan's nuclear workers if Kiyuna's malignant lymphoma were to be accepted.

Mikiko Watanabe (CNIC)

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## Letter Protesting US-India Nuclear Deal Sent to Nuclear Supplier Group Countries

Prime Minister ... / President ...

We write to you on behalf of ABOLITION 2000, a global network of over 2000 organizations in more than 90 countries working for a global treaty to eliminate nuclear weapons, to share our concern about the nuclear agreement that has been negotiated between the US and India. We hope that, like us, your government will consider the deal to be deeply flawed and reject it.

As you know, the United States and India recently finalized details of a proposed agreement that will exempt India from long-standing restrictions on nuclear trade. For this deal to proceed, India must negotiate a safeguards agreement with the International Atomic Energy Agency (IAEA) and the 45 member-states of the Nuclear Suppliers Group (NSG) also must decide to grant India a special exemption from their rules governing nuclear trade.

Your government is represented on both the Board of Governors of the IAEA and on the NSG, so it is in a position of great responsibility. We urge you to ensure that there is no rush to judgment in the negotiation of a safeguards agreement between India and the IAEA or at the NSG. The goal of members states in both bodies should be to ensure that the US-India deal comply fully with current international nuclear disarmament and non-proliferation agreements, principles, and norms.

In the case of the NSG, all 45 member countries have a power of veto over implementation of the US-India nuclear agreement. For the reasons outlined below we urge you to exercise that power. Furthermore, we believe that the deal is of such consequence for the international non-proliferation regime that the final decision on this matter should be made by the NPT parties at the next Review Conference, in 2010. The currently applicable consensus within the NPT framework is that countries should not receive nuclear assistance unless they have made "internationally legally binding commitments not to acquire nuclear weapons or other nuclear explosive devices". (See paragraph 12 of the 'Principles and objectives for nuclear nonproliferation and disarmament' Decision 2, 1995 NPT Extension Conference). We urge you to make it clear that any effort to force a decision in the NSG prior to a new consensus among the NPT parties will be opposed by your government.

### Background and Analysis

The text of the agreement (referred to as a "Section 123" agreement after the section in the US Atomic Energy Act) was released on 3 August 2007. Key features are an unusual arrangement for a dedicated reprocessing facility and U.S. fuel supply assurances to India. In both areas the proposed agreement grants preferential treatment to a non-NPT party. These attempts to finesse concerns about compliance with US law (the Atomic Energy Act and the Hyde Act) must not be allowed to blind the governments of other countries to the broader concerns discussed below.

Since its nuclear test in 1974, India has been subject to sanctions on trade in nuclear technology. After India and Pakistan conducted nuclear tests in 1998, the United Nations Security Council passed a resolution (SC1172) condemning the tests. The "Section 123" agreement violates SC1172, which calls on India and Pakistan "immediately to stop their nuclear weapon development programs, to refrain from weaponization or from the deployment of nuclear weapons, to cease development of ballistic missiles capable of delivering nuclear weapons and any further production of fissile material for nuclear weapons." The Resolution also "encourages all States to prevent the export of equipment, materials or technology that could in any way assist programs in India or Pakistan for nuclear weapons." In the absence of India halting the production of fissile material for weapons, the supply of uranium to India by the international community for the reactors on its civilian list would still free up India's limited supply of indigenous reactor fuel for the sole purpose of fueling plutonium production reactors, thus indirectly assisting India's nuclear weapons program. (2)

The Section 123 agreement would allow for the transfer of sensitive reprocessing technology under certain circumstances. But the supply to India of equipment that may also be used in reprocessing, uranium enrichment, and heavy water production facilities risks that such equipment may be replicated and used in India's unsafeguarded nuclear weapons program. Such cooperation, if allowed by the NSG, could violate the original five Nuclear-Weapons States' NPT obligations under Article I of the NPT, which prohibits nuclear-weapon states from assisting non-nuclear-weapon states in any way to acquire nuclear weapons.

Despite developing and testing nuclear weapons outside the framework of the NPT, India is getting more favorable treatment than any NPT state with which the United States has a nuclear cooperation agreement. The

Arms Control Association made the following comment in a Background Memo (3) issued in response to the August 3 release of the text of the "Section 123" agreement:

"The U.S.-India nuclear trade deal would grant India benefits not available to the non-nuclear weapon states parties to the nuclear Nonproliferation Treaty without even requiring it to meet all of the responsibilities expected of the five original nuclear-weapon states.

"For example, unlike China, France, Russia, the United Kingdom, and the United States, India has refused to sign the 1996 Comprehensive Nuclear Test Ban Treaty and it has refused unilaterally to declare a halt to the production of fissile material for weapons -- as France, Russia, the United Kingdom, and United States have all done."

There is an immediate risk that the US-India nuclear agreement will fuel a nuclear arms race between India and Pakistan. Pakistan's National Command Authority (NCA), chaired by President Pervez Musharraf, has declared that "In view of the fact the [U.S.-India] agreement would enable India to produce a significant quantity of fissile material and nuclear weapons from unsafeguarded nuclear reactors, the NCA expressed firm resolve that our credible minimum deterrence requirements will be met." This suggests a South Asian fissile material race may be imminent.

Exempting India from international rules governing trade in nuclear technology threatens to undermine the nuclear non-proliferation order and thereby the prospects for global nuclear disarmament. Regardless of claims that the exemption will apply only to India, inevitably other nuclear proliferators will expect the same treatment. There is a danger that Pakistan, Israel and North-Korea, and possibly other countries in future, will see this as an opportunity for them to lay similar claims. For this and all the above reasons we urge you to reject this ill-conceived nuclear agreement.

Philip White, US-India Deal Working Group Coordinator  
Steven Staples, Global Secretariat to Abolition 2000

14 August 2007

#### Notes and References

1. ABOLITION 2000's US-India Deal Working Group was established at ABOLITION 2000's Annual General Meeting held during the May 2007 NPT PrepCom in Vienna. ABOLITION 2000 lobbied governments at the NPT PrepCom.
2. Zia Mian, A.H. Nayyar, R. Rajaraman and M. V. Ramana, Fissile Materials in South Asia: The Implications of the US-India Nuclear Deal, International Panel on Fissile Materials, Research Report #1, 11 July 2006
3. Arms Control Association Background Memo, "U.S.-Indian Nuclear Agreement: A Bad Deal Gets Worse", August 3, 2007

#### Endorsed by Members of Abolition 2000 US-India Deal Working Group

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Beatrice Fihn (Sweden), Womens' International League for Peace and Freedom  
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Ak Malten (The Netherlands), Global Anti-Nuclear Alliance  
Nouri Abdul Razzak Hussain (Egypt), Secretary-General, Afro-Asian Peoples' Solidarity Organization  
Sukla Sen (India), National Coordination Committee Member, Coalition for Nuclear Disarmament and Peace  
SANSAD (South Asian Network for Secularism and Democracy)  
Steven Staples (Canada), Director, Rideau Institute on International Affairs, Global Secretariat to Abolition 2000  
Heinz Stockinger (Austria), PLAG - Independent Platform Against Nuclear Dangers  
Aaron Tovish (USA), International Manager, Mayors for Peace 2020 Vision Campaign International Secretariat  
Philip White (Japan), Citizens' Nuclear Information Center

## Group Introduction:

# Stop Rokkasho Japan

by Sukiko Kannaduki\*

**S**TOP-ROKKASHO was initiated by musician Ryuichi Sakamoto in order to tell the world via the internet, through music and art, about the dangers of the Rokkasho Reprocessing Plant in Aomori Prefecture. Until then, he himself had only a vague knowledge of the dangers, but when the active tests began he learnt that "in one day the plant will release the amount of radioactivity released in one year by a normal nuclear power plant". He expressed the feelings he had at the time as follows: "Anyone will help someone drowning before their eyes, won't they? I don't think you can pretend not to see. Likewise, having seen those words, I could not just walk away. I thought about what I could do and decided to set up a web site." But it was not just the facts about radioactivity that surprised him. He was surprised to discover that, even as this terrible thing was about to happen, hardly anyone, including himself, knew about it.

It is easy for people to become interested in art and the field that he specializes in, music. He invited musicians and artists to donate their works and people from Japan and from all around the world responded. He uploaded these works onto the website. Since this novel system of disseminating information is not for profit, people can download the works, pass them on and alter them freely. Above all, he wanted people to know what's going on. The information is presented simply, so that people who visit the web site can understand the problems with the Rokkasho Reprocessing Plant.

Soon after the website was set up, coinciding with his visit to Japan (he lives in New York), he, along with environmentalists with whom he has a strong affinity, set up "STOP-ROKKASHO-JAPAN". This is not an organization as such. It is a loose network of people who agree with the aims of the STOP-ROKKASHO website. They share information and exchange ideas through an email list and cooperate in activities opposing the Rokkasho Reprocessing Plant.

His initiative has had an influence on many people, from people who did not previously know about the problems, to people who knew but were not interested. The logo by internationally renowned designer Jonathan Barnbrook and the music and art create not just a stylish atmosphere,



they also make the site friendly and accessible. The large number of young supporters is particularly striking. Dynamic young people are raising the STOP-ROKKASHO placard and opening stalls at events all around the country to communicate to more and more people the problems of the Rokkasho Reprocessing Plant. Some people are spreading the message through the medium of fashion by collaborating to sell T-shirts and bags, others are holding live concerts and events in clubs, while others are producing books under the Rokkasho title. Everyone is spreading the message in the field where their skills lie.

STOP-ROKKASHO was set up to spread the message via the internet, but it has crossed the boundaries of the internet and has given birth to a new style and dynamism that hitherto was unfamiliar to the shy Japanese.

The URL for the STOP ROKKASHO Web Site is as follows:

<http://stop-rokkasho.org/>

\* *Sukiko Kannaduki is a writer who specializes in nuclear and environmental issues. To spread the message in the fashion world, she has written a series called "I Love No Nukes" for the web site of an apparel company.*



# NEWS WATCH

## **Monju Plant-Confirmation Tests Begin**

Modifications of Japan Atomic Energy Agency's (JAEA) Monju Prototype Fast Breeder Reactor (280 MW, Tsuruga City, Fukui Prefecture), which began in March 2005 (NIT 110), were completed on August 30 this year and plant-confirmation tests were commenced the following day. Operation of Monju has been suspended since an accident caused by a sodium leak in December 1995. The accident occurred shortly after trials of the plant commenced. The main purpose of the plant-confirmation tests is to confirm that equipment and machinery which has been idle since the accident is still in sound condition.

Originally JAEA planned to complete the tests by next May, but the details of the tests were reconsidered in response to comments from local citizens' groups. About 50 extra test items were added, including Eddy Current Technique (ECT) of all the pipes in the steam generator, bringing the total number of items to 140. As a result the tests will continue for an extra 3 months to August. In addition, JAEA decided to take the precaution of conducting preparatory operations for 2 months before the commencement of full operation.

As a result, the schedule for recommencement of operations has been extended by 5 months from May to October 2008.

## **Successive Cases of Arson at Tomari-3 Construction Site**

There were successive cases of arson between July and August at the construction site of Hokkaido Electric Power Company's Tomari-3 (PWR, 912 MW) nuclear power plant. The first incident occurred on July 3. A second incident occurred on July 4, the day the reactor pressure vessel was transported into the site. In total, there were 6 incidents up until August 9. All were small-scale fires. It appears that the intention was not to cause major damage. The culprit has not been found and we can only speculate about the motive, but it has been said that the fires might not have been lit so much as a result of personal resentment, but rather as a protest against the

prioritization of cost at the site.

In order to prevent a recurrence, additional surveillance cameras have been installed and an additional 70 people have been employed to monitor the site. Workers are required to undergo body checks and they have been banned from moving around the site on their own. Efforts to find the culprit include posting 50 notices around the site offering a reward of 2 million yen to anyone providing useful information.

## **Agricultural and seafood producers and consumers oppose Rokkasho**

For the first time, agricultural and seafood producers in Aomori Prefecture and neighboring Iwate Prefecture have joined hands with cooperatives which distribute their products and consumers' groups to form a national network to oppose the Rokkasho reprocessing plant and prevent radioactive contamination. CNIC's Masako Sawai was the keynote speaker at a meeting held to launch the network in Tokyo on July 28. Then on August 25 over 300 people from all over Japan attended a meeting held in Aomori City. Scientists and representatives of local opposition groups and sponsoring organizations delivered messages at the meeting. They expressed their resolve to prevent the operation of the Rokkasho Reprocessing Plant, so that people can continue to eat the produce of Aomori and Iwate Prefectures without fearing that it is contaminated with radioactivity.

## **Regulations to be changed to extend time between periodic inspections**

The Nuclear Industrial and Safety Agency plans to change its regulations to extend the time between periodic inspections, thus allowing nuclear power plants to operate consecutively for longer periods. It is aiming to implement the changes in 2008, but local and prefectural governments are strongly opposed.

Under the current regulations, the longest that nuclear power plants can be operated before undergoing a periodic inspection is 13 months. Under the draft amendment, the period would be

set at 13 months, 18 months, or 24 months on the basis of individual assessments for each plant. Power companies would submit applications and a decision would be made based on an engineering assessment of the state of each plant.

Local and prefectural governments say that they do not object to changes to improve safety, but that the citizens will not accept changes for the sake of improving plants' capacity factor. Another issue influencing their attitude is that during periodic inspections a large number of workers come to the region and contribute to the local economy in such areas as accommodation, restaurants and the entertainment industry. These industries would suffer if there were a reduction in the number of periodic inspections.

### **Next generation light water reactors**

On September 12, the Ministry of Economy Trade and Industry, Japan Electrical Manufacturers' Association and the Federation of Electric Power Companies agreed on joint development of next generation light water reactors. It will be the first such joint development for around 20 years. However, instead of the utilities, which have lost their former strength (and will?), the plant makers will take the central role in the development.

The plan involves investment of around 60 billion yen of public and private money over a period of eight years from 2008. 1,700~1,800 MW scale BWR and PWR reactor types will be developed in parallel. To the extent that standardization is not compromised, bearing in mind the potential for exports, 800~1,100 MW medium-scale reactors will also be kept in the picture.

The aim is to improve the economics of nuclear power through high burn-up 5% enriched uranium fuel, extension of operating life to 80 years and substantial reduction in construction time. Nevertheless, it is unclear whether power

companies will actually buy the plants.

### **Muslim clerics say "No" to nuclear plan**

On September 2, the Jepara branch of Indonesia's largest Islamic organization, Nahdlatul Ulama (NU), issued a statement declaring the proposed Muria nuclear power plant "haram" or "forbidden". The statement was issued by a gathering of over 150 clerics in Jepara, Central Java.

We suspect that the effects of the Chuetsu-Oki Earthquake on the Kashiwazaki-Kariwa nuclear power plant had some influence on the thinking of the NU clerics. Two Indonesians visited Japan in July, immediately before the Chuetsu-Oki Earthquake (see NIT 119). One of them, Nuruddin Amin, is a local Jepara NU leader. Their meeting with local activists opposed to the Hamaoka nuclear power plant was a highlight of their visit. Hamaoka sits on top of the site of the predicted Tokai earthquake.

The Indonesian government has not yet made a firm decision to cancel the Muria plan, but there is a marked change in the statements it is making now. Instead of the certainty of its previous statements, the government is now saying things such as, "The Muria nuclear power plant plan is not final. The government has not decided yet whether it will be built or not."

A striking aspect of NU's statement was the concern it showed for the feelings and the well-being of the general community. Hopefully the Indonesian government will show its respect for the feelings of its people by canceling the Muria nuclear power plant plan.

The Japanese government and industry must accept that the writing is on the wall for Muria. They have been currying favor with the Indonesian and other South-East Asian governments in the hope of winning nuclear power contracts, but they must accept the will of the Indonesian people.

**Nuke Info Tokyo** is a bi-monthly newsletter that aims to provide foreign friends with up-to-date information on the Japanese nuclear industry as well as on the movements against it. Please write to us for a subscription (Regular subscriber - \$30 or ¥ 3,000/year; supporting subscriber \$50 or ¥ 5,000/year). When paying in Japan, the subscription fee should be remitted from a post office to our post office account No. 00140-3-63145, Genshiryoku Shiryou Jouhoushitsu. Due to costly processing fees on personal checks, when sending the subscription fee from overseas, please send it by international postal money order. Alternatively, you can ask us to send you details regarding bank transfers. We would also appreciate receiving information and newsletters from groups abroad in exchange for this newsletter.

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