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## Breakaway from the “Spiral of Silence”

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In Japan, we have seen a series of accidents and troubles involving nuclear power and the nuclear fuel cycle happen in the space of a few years. Specifically, they include the sodium leak accident in the Monju fast breeder reactor that occurred in December 1995, and what we call the JCO accident at Tokai-mura in September 1999. The latter was the first radiation accident in Japan to reach Level 4 on the International Nuclear Event Scale (INES). Two people were killed in the accident and that fuelled public concern about the safety of nuclear power.

In addition, the fact surfaced that British Nuclear Fuels (BNFL) had falsified the data about MOX fuel which it had transported to Japan, further eroding public confidence in the reliability of nuclear power at large.

These and other accidents and events have led to delays across the board in the on-going programmes for construction of additional nuclear power plants, and in nuclear fuel recycling projects, including plutonium use in thermal reactors. Furthermore, fuelled by unrealistic expectations of renewable energy sources on one hand, and the stalling of industrial nuclear power development projects in the USA and other Western countries on the other, public criticism has been growing day by day. There are calls for de-nuclearisation, or a shift of policy away from nuclear energy utilisation.

Coming at the same time was the news that the number one reactor at the Barsebäck Nuclear Power Plant in Sweden was decommissioned despite its high level of performance, as well as the news of the agreement reached in June 2000 between the German government and major electricity companies to phase out that country's commercial nuclear programme. All these events gave impetus to those promoting de-nuclearisation in Japan.

### **Spiral of Silence**

Spiral of Silence is a term in sociology that refers to a situation where opinions are divided between two sides with one side becoming increasingly vocal, overwhelming the other side into silence. The theory says that once the vocal side has the upper hand, the other side is caught in a “spiral of silence”, finding it increasingly difficult to dispute whatever the other side says, thus hampering the fair representation of the two sides.

By and large, mass media are sensitive to public sentiment and change sides as public sentiment shifts. So they tend to side with the vocal with little regard to their legitimacy and jump onto the bandwagon, stifling the weaker voice into silence. That is what is happening today as far as the issue of nuclear power is concerned.

Faced with growing criticism of nuclear power on the strength of the recent series of accidents and incidents, those of us who promote nuclear power

should not remain silent. Unless we speak out to countervail the opponents, we will inevitably go down the Spiral of Silence.

In order to stop falling down into that spiral, we need to:

- First, improve the existing systems and regulations for nuclear safety, for everybody to see.
- Second, build up a good record of safe operation of nuclear facilities.
- Third, stand up and speak out against misled voices, in favour of fair discussions on basic energy policy.

If we fail to take these steps, there will be no tomorrow for nuclear power.

### **Specific Measures**

What, specifically, can we do to stop the Spiral of Silence? Let me propose what to do for each of the three areas as mentioned above.

#### *Improving Existing Systems and Regulations*

To improve the existing systems and regulations, the first thing we can do is administrative reforms of nuclear operations to further ensure their safety. In the last session of the Diet of Japan, the law regulating nuclear power reactors was amended in the wake of the JCO accident to enforce regular inspections of nuclear fuel processing facilities. The new law also transfers the Secretariat of the Atomic Power Safety Commission from the Science and Technology Agency to the Prime Minister's Office (which is to become the Cabinet Office from 1 January 2001) with increased staffing. From 2001, a new agency, the Agency of Nuclear Safety and Security, will start within the Ministry of Economy and Industry to oversee the overall safety of nuclear power operations under one unified jurisdiction.

The second thing is, in the area of nuclear accidents and legislative measures, to cope with them. A law was enacted in the last session of the Diet to provide for special measures to cope with nuclear accidents. Specifically, the law provides for assignment of full time nuclear safety specialists as inspectors at each and every site with nuclear operations. The law also defines the responsibilities of the national government in case of accidents and sets forth other detailed schemes including the creation of an off-site centre in an emergency. The law came into force in June 2000.

The third thing to do is autonomous efforts and cooperation on the part of private-sector business corporations. Under the auspices of the Japanese nuclear power industry, the Nuclear Safety Network (NS-Net) was created as a private-sector organisation to promote the safety of nuclear power operations. Not only nuclear power companies but also related companies involved in nuclear processing, enrichment, reprocessing, and waste disposal, covering the whole nuclear fuel cycle, joined this organisation as members. Member companies undertake peer reviews by visiting each other's operational sites.

#### *Efforts to Build Up a Good Record of Safe Operations*

First and foremost, we need to have uninterrupted good records of safe nuclear operations. Let facts speak for themselves in place of hundreds of words in explanation. Words fail before facts.

Secondly, stepped-up promotion of new nuclear power plants. This is necessary to deliver on the international commitment which Japan made at COP-3 in Kyoto to reduce greenhouse gas emissions by 6% by 2010. It is imperative for us to complete the on-going construction of Onagawa-3, Higashidori-3, Hamaoka-5, Shika-2, Shimane-3, Tomari-3, Ohma-1, Tsuruga-3 and -4, and Fukushima Daiichi-7 and -8.

Thirdly, steady promotion of nuclear fuel cycle policy. We need to push steadily for the implementation of the plutonium for thermal reactors (MOX fuel) programme, construction of the Rokkasho Reprocessing Plant, and the final disposal of high level radioactive wastes. The law for the Promotion of Final Disposal of High Level Radioactive Wastes was passed by the Diet on 31 May 2000. The law provides for the principal entities responsible for disposal of high level wastes and management of the funds respectively, continuous funding, and a scheme for selection of a final disposal site. This legislation marks the important first step in resolving this long-standing issue.

*Speaking Out Against Misdemeanors, and Fair Discussions on Energy Policy*  
Energy policy must be based on long-term economic efficiency, energy security and environmental compatibility. Energy sources must be selected by the following criteria: quantity, quality, costs, and time. Premised on this concept, an energy portfolio should be developed incorporating energy conservation, renewable energies, efficient use of fossil fuels, and nuclear power (including fast breeder reactors).

Recently a forum called the Nuclear Policy Round Table Meeting of Diet Members was held by politicians representing six Japanese political parties, and it was open to the public. This type of discussion should be encouraged among legislators so as to enhance the transparency of energy policy making. Riding the recent waves of the so-called “renewable energy boom”, there are people who argue that “there is no need at all for nuclear power since we have natural energies”, “de-nuclearisation is progressing worldwide”, or even something like “nuclear power generation is like a condominium without a restroom”. All these comments arise from misunderstandings of our energy policy. We should lose no time to argue our position, backed by facts, against these misled arguments.

### **The Best Arguments to Use**

#### *Can Renewable Energy be Our Saviour?*

The answer is no. No, it cannot. It is true that renewable energies are never used up and environmentally friendly and, therefore, worth promoting. But in terms of quantity, quality and costs, they cannot replace other energies as a major energy source. They will remain supplemental to other energies into the future. And there is no doubt about that.

For example, Japan leads all other nations in photovoltaic power generation with 150 000 kW at present. Even if it is increased 40 times to 5 million kW by 2010, its share in total primary energy supply will be only 0.2%. Still costly, it will remain the least competitive energy source.

What about wind power? It is becoming increasingly popular in Denmark, northern Germany, the US state of California, and India. In Japan, it is being introduced in some parts of the country with favourable wind conditions. Let

me note here again that in the case of Japan, even if wind capacity builds up to 3 million kW by 2010, or 80 times the present level of about 40 000 kW, it will be a minuscule 0.2% as a percentage of total primary energy supply.

*Is De-Nuclearisation a Worldwide Trend?*

The answer is no. It is true that in recent years there has been no new construction of nuclear power plants in the USA and European countries. Furthermore, one nuclear power plant was decommissioned in Sweden, and in Germany the government has agreed to phase out commercial nuclear power generation. But in both of the latter two countries, these were political decisions made by the coalition governments which include the Green Party as a coalition partner. So there is a possibility of both decisions being overturned depending on the outcomes of future general elections. In reality, nuclear power as a percentage of total power supply stands at 24% in the OECD, 20% in the USA, 30% in both the UK and Germany, 36% in Japan, 47% in Sweden, 60% in Belgium, and 75% in France.

In the USA, the development of fourth generation nuclear reactors is listed as a programme of on-going R&D efforts. In view of the progress made in the restructuring of safety regulations, there is a good possibility of new nuclear power plant construction getting underway. Also in other parts of the world, like Northeast Asia and South Asia, there are a number of plans to build nuclear power plants. This is what is happening worldwide and, therefore, you cannot say de-nuclearisation is a worldwide trend.

*Is Nuclear Power Comparable to a Condominium Without Restroom?*

The answer is no. It is true that the issue of final disposal of high level radioactive wastes is not yet resolved. But there has been steady progress in the efforts to resolve the issue over the years. In the USA, the Environmental Impact Assessment on Yucca Mountain as a disposal site was submitted to the federal government for its decision and for review by Congress. Whether the location comes through as the disposal site depends greatly on the decision of the President. It must be also noted that final disposal of military transuranic wastes in the rock salt layers at Carlsbad actually started in 1999.

In Finland, the local community approved the siting of a repository for final disposal of high level radioactive wastes at Olkiluoto by a vote of 20 to 7 earlier in 2000.

In Japan, slowly but steadily progress is being made in this area. In May 2000, a law was enacted to expedite the final disposal of high level radioactive wastes, providing for the establishment of an entity responsible for actual disposal of such waste materials and for funding of such activities. Assuredly the restroom is being built.

We in the nuclear industry should not stay silent, since we have many forward-looking ideas which we should say out loud. I do hope that all of you at this Symposium will join me in conveying to your friends, to your respective governments, and to the media, the arguments I have presented in this paper.

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### **Addendum: Nuclear Power in the Energy Policy of the Liberal Democratic Party of Japan**

In May 2000, the Liberal Democratic Party of Japan, as the leading party of the coalition government, made public its interim report on comprehensive energy policy formulation. This attracted media attention and coverage. As Secretary General for the committee responsible for the study, let me recap what it says about nuclear power:

The fundamental goals of energy policy are energy security, environmental compatibility and long term economic efficiency based on market principles. Nuclear power is reaffirmed as an important energy source to meet such goals.

Every scientific technology has benefits, or its light side, and risks as well, or its dark side. The greater the benefits, the more risks to accompany them. Nuclear power has brought about enormous benefits but as many risks as well to go with them. The light side is represented by the following facts:

1. Over the years from the 1973 oil crisis to 1998, the oil dependency rate for electrical power supply in Japan plummeted from 71.4% to 10.8%. This was made possible by nuclear power increasing its contribution from 2.6% to 36.8% and LNG similarly from 2.4% to 24.6%. Nuclear power can also provide bargaining power when we negotiate the purchase of oil and natural gas, which is of long term importance.
2. Nuclear power produces the least amount of carbon dioxide emissions per unit of power generated. It is comparable to geothermal and hydro in this respect. Its emissions are less than one tenth of those of photovoltaic and wind energy, and much less (by several fold) when compared with fossil fuels.
3. Reprocessing of spent fuel and the use of fast breeder reactors makes recycling of uranium as fuel possible.

On the other hand, there are risks involved in three areas: potential accidents, waste disposal, and proliferation of nuclear weapons. These risks are within our control:

1. Risks of accidents have been scientifically studied in detail and incorporated into the designs of nuclear power plants as multi-protective systems or defence in depth. But, the JCO accident shows that this did not work in the conversion process of fuel processing. Therefore, risk control is to be further strengthened for the entire process of the nuclear fuel cycle.
2. The present status of nuclear waste disposal is compared by some to a condominium without a restroom. It is not nuclear power alone that produces wastes. Nuclear wastes are much smaller in volume compared with other energies, and the nature of the wastes, and the potential danger involved, is fully known, thus making them easier to handle.
3. No-one disputes the need to prevent proliferation of nuclear weapons in our country. Japan adheres to its avowed principle of the peaceful use of nuclear power. We are open to IAEA inspections and monitoring, and there is no move whatsoever which could invite suspicion.

We might reject nuclear power simply because of potential risks. But we can also come to grips with those risks and, by putting them under control

technically as well as socially, enjoy the benefits that nuclear power offers. That is what human wisdom dictates and that is how humankind has progressed. With all this in mind, we will continue to promote nuclear power, while paying full attention to safe operations, to achieve reduced dependency on fossil fuels, reduced emissions of greenhouse gases, and enhanced energy security.

There is no immediate commercial need for fast breeder reactors, but the FBR remains an important subject for research and development from a long term perspective. The prototype FBR Monju has been suspended for the time being, but it should not be considered as the final design for FBRs.