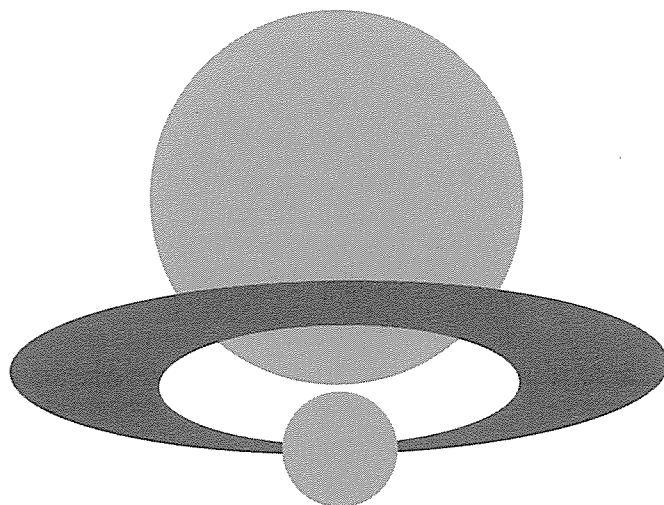


The 32nd JAIF ANNUAL CONFERENCE

ABSTRACTS



April 12-14, 1999

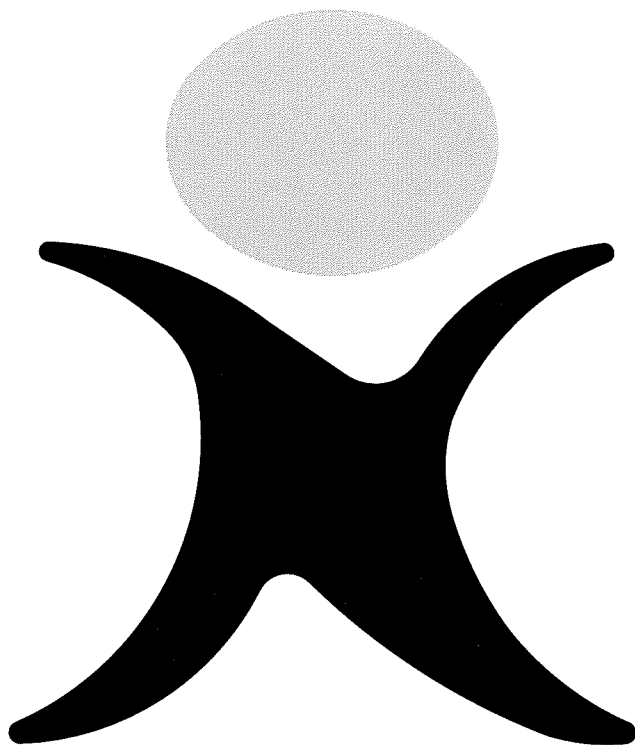
Sendai International Center

Sendai, Japan

JAPAN ATOMIC INDUSTRIAL FORUM, INC.

Get'em
healthy, Nature
and
People,

Get Energy
with
Electricity.



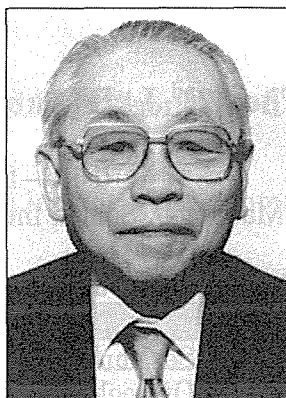
Every one of Toshiba's engineer is enthusiastic about creating an environment where individuals can live meaningful lives in comfort and abundance. As an integrated manufacturer of electric and electronics products, we have directed concerted efforts to the development of **nuclear power** as a stable energy source for the 21st century.

The basic principle of Toshiba's Nuclear Energy Division is respect for humanity. This inspires us to devote ourselves to ceaseless technical advances that contribute to the realization of a better environment and the development of society.

TOSHIBA

TOSHIBA CORPORATION
POWER SYSTEMS & SERVICES COMPANY
NUCLEAR ENERGY DIVISION

1-6, UCHISAIWAICHO 1-CHOME, CHIYODA-KU, TOKYO, 100-8510 JAPAN PHONE: (03) 3597-2068



Takashi Mukaibo
JAIF Chairman



Jun-ichi Nishizawa
Chairman of the
Program Committee

The 32nd JAIF Annual Conference

Main Theme: Can Nuclear Energy Save the Earth?

In growing awareness of global climate change, nuclear power can be regarded as one of the most effective solutions. Given its clean electricity generating technology, the significance of nuclear power is increasing together with its potential for a stable energy supply. Nuclear power development and use have been under challenges to drawback in some countries, however, as financial crises overwhelming in Asia and environmentalists movements influencing national energy policies. In Japan, the long-term nuclear energy development policy is going to be revised soon. It has been widely recognized that taking positive measures such as emphasis on the public involvement and consensus building on the policy making are the fundamental requirements for the better general acceptance of nuclear power. How peaceful and effective we can utilize nuclear energy will be an answer for our sustainable development.

The 32nd JAIF Annual Conference provides a platform where nuclear specialists and non-specialists can exchange views on issues of contemporary significance related to nuclear power developments in light of global energy security.



The 32nd JAIF Annual Conference

April 12—14, 1999
Main Hall, Sendai International Center

Main theme: Can Nuclear Energy Save the Earth?

	Monday, April 12	Tuesday, April 13	Wednesday, April 14
A M	<u>Opening Session</u> (9:30~12:15) <Opening Remarks>	<u>Session 2</u> Outlook for Japan's Long-term Program for Nuclear Energy Research and Development (9:00~12:00) <Panel Discussion>	<u>Session 4</u> FBR "Monju" and its Future and Plutonium Recycling (9 : 00~12 : 00) <Panel Discussion>
	<Special Lectures>		
	Lunch Break (12:00~13:30)	Luncheon (12:15~14:15) At Reception Hall "Sakura" Films on Nuclear Energy (13:15~14:15) At Main Hall	Lunch Break (12:00~13:30)
P M	<u>Session 1</u> Civilization and Energy Security (13 : 30~17 : 00) <Lectures>	<u>Session 3</u> Information Disclosure and Communications with the Public (14:30~17 : 30) <Panel Discussion>	<u>Session 5</u> HLW Disposal and the Challenges (13 : 30~16 : 30) <Panel Discussion>
	<u>JAIF Chairman's Reception</u> (18 : 00~19 : 30) At Banquet Hall "Heisei" Sendai Kokusai Hotel	<u>Public Talks</u> Nuclear Energy Policy: A Local Perspective (17 : 45~19 : 45) At Tachibana Conference Hall	Post-conference tours: ①Onagawa Nuclear Power Station ②Rokkasho Nuclear Fuel Cycle Facilities

Program of the 32nd JAIF Annual Conference

April 12—14, 1999

Main Hall, Sendai International Center

MONDAY, APRIL 12

OPENING SESSION 9:30—12:15

Chairman:

Toshiaki Yashima

Representative Director & President, Tohoku Electric Power Co., Japan

JAIF Chairman's Address

Takashi Mukaibo

Chairman

Japan Atomic Industrial Forum

Remarks by Chairman of Atomic Energy Commission of Japan

Akito Arima

Chairman of Atomic Energy Commission of Japan;

Minister of State for Science and Technology

Welcome Remarks by Miyagi Prefectural Governor

Shiro Asano

Governor of Miyagi Prefecture, Japan

Remarks by Chairman of the Conference Program Committee

Jun-ichi Nishizawa

President

Iwate Prefectural University, Japan

Chairman:

Tsutomu Kanai

President, Hitachi Ltd., Japan

Special Lecturers:

“Our Challenges for the Future of Nuclear Power”

Hiroshi Araki

Chairman, Federation of Electric Power Companies;

President, Tokyo Electric Power Co., Japan

“Korea's Expectation for Nuclear Power Development for 2000 and beyond”

Young-Sik Jang

President and CEO

Korea Electric Power Corporation, Korea

“U.S. Energy Policy and International Cooperation”

Ernest Moniz

Under Secretary

Department of Energy, U.S.A.

“The Future of Nuclear Power: Looking Ahead”

Mohamed ElBaradei

Director General

International Atomic Energy Agency

SESSION 1 13:30—17:00

“Civilization and Energy Security”

Chairman:

Shumpei Kumon

Executive Director

Center for Global Communications

International University of Japan

Lecturers:

“The Middle East: Vital Geopolitical and Strategic Interests”

Judith Kipper

Director, Middle East Forum

Council on Foreign Relations, U.S.A.

“Civilization, Energy and Nuclear Power”

Yoshihiko Sumi

Director and Executive Vice President

Kansai Electric Power Co., Japan

“The Nuclear Contribution to Energy Security for the United Kingdom”

Sue Ion

Director, Technology and Operations

BNFL, U.K.

“Nuclear Power in France: Turning a Weakness into a Strength”

Bertrand Barré

Director, Nuclear Reactor Division

Commissariat à l’Energie Atomique (CEA), France

“Security Issues and Nuclear Energy”

Satoshi Morimoto

Senior Researcher

Nomura Research Institute, Japan

Discussion with the floor

JAIF CHAIRMAN’S RECEPTION 18:00—19:30

At Banquet Hall “Heisei,” 2nd floor, Sendai Kokusai Hotel

(For the Reception attendants, bus service will be available from the Conference Center to the Hotel.)

TUESDAY, APRIL 13

SESSION 2 9:00—12:00
“Outlook for Japan’s Long-term Program for
Nuclear Research and Development”

Chairman:

Jun-ichi Nishizawa
President, Iwate Prefectural University;
The Conference Program Committee Chairman

Speaker:

Soichiro Tahara
Journalist, Japan

Panelists:

Tadao Ishibashi
Attorney at Law, Japan

Tadayuki Murakami
Department Director, Department of Economic and Social Policy
Japanese Trade Union Confederation

Soichiro Tahara
Same as above

Hiroyuki Torii
Editorial Writer
The Nihon Keizai Shimbun, Japan

Susumu Yoda
President
Central Research Institute of Electric Power Industry, Japan

Discussion with the floor

LUNCHEON 12:15—14:15
At Reception Hall “Sakura” , Sendai International Center

Remarks by State Secretary for International Trade and Industry
Sanzo Hosaka
State Secretary for International Trade and Industry, Japan

Special Lecturer:

“Nature of the Japanese Culture”

Tetsuro Morimoto
Critic/Formal Professor of Tokyo Women’s University, Japan

FILMS ON NUCLEAR ENERGY

13:15—14:15

At Main Hall, Sendai International Center

Latest films on Japan's nuclear energy research and development activities will be presented for those who will not be attending the Luncheon.

SESSION 3 14:30—17:30

“Information Disclosure and Communications with the Public”

Chairman:

Akira Oyama
President
Japan Atomic Energy Relations Organization, Japan

Keynote Speaker:

“Information Disclosure in Japan Nuclear Cycle Development Institute”

Isamu Sasaya
Executive Director
Japan Nuclear Fuel Cycle Development Institute, Japan

Panelists:

Tetsunari Iida
Senior Researcher, Dept. of Environmental and Social Policy Studies
Japan Research Institute

Kiyotake Inaba
Professor
Gunma University, Japan

Michio Kakuta
Chief Editorial and Board of Trustee
Information Center on Nuclear Issues, Japan

Takao Shiokoshi
Editor in Chief
The To-o Nippo Press, Japan

Zenjiro Suda
Mayor of Onagawa Town, Japan

Hideo Yakabe
Director and General Manager
Plant Siting and Public Relations Department
Japan Nuclear Fuel Limited

Discussion with the floor

PUBLIC TALKS 17:45—19:45
“Nuclear Energy Policy: A Local Perspective”
At Tachibana Conference Hall, Sendai International Center

Moderator:

Kazuko Tamura
Senior Writer and Editorial Writer
Kyodo News Agency, Japan

Commentators:

Soichiro Tahara
Journalist, Japan

Yuko Tanaka
Lecturer
Yamagata Women's Junior College, Japan

Kazuhisa Mori
Executive Vice Chairman
Japan Atomic Industrial Forum
(Other commentators to join)

WEDNESDAY, APRIL 14

SESSION 4 9:00—12:00
FBR “Monju” and its Future and Plutonium Recycling

Chairman:

Shunsuke Kondo
Professor
University of Tokyo, Japan

Keynote Speaker:

“JNC's Research & Development Activities on Pu recycling
-- Outline of JNC's Medium- and Long-term Operation Plan -- ”
Yasumasa Togo
President
Japan Nuclear Cycle Development Institute, Japan

Panelists:

Saburo Kikuchi
Executive Director
Japan Nuclear Cycle Development Institute, Japan

Jean-Louis Ricaud
Senior Vice President
COGEMA, France

Hiroko Sumita
Attorney at Law, Japan

Katsuya Tomono
Director and Executive Vice President
Tokyo Electric Power Co., Japan

Hiromichi Yokoyama
Editorial Writer
The Mainichi Newspaper, Japan

Discussion with the floor

SESSION 5 13:30—16:30
“HLW Disposal and the Challenges”

Chairman:

Akio Morishima
Professor
Sophia University, Japan

Keynote Speaker:

“ ”

Yoshihiko Sasaki
Deputy Director General
Agency of Natural Resources and Energy
Ministry of International Trade and Industry

Panelists:

Antoine Allemeersch
Vice President
Regional Council of Haut-Marne, France

Teruyuki Aoki
Managing Director
Chubu Electric Power Co., Japan

Keiji Kojima
Professor Emeritus
University of Tokyo, Japan

Sumio Masuda
Director
Geological Isolation Research Project
Japan Nuclear Cycle Development Institute, Japan

Michio Suzuki
Managing Director
Steering Committee on High-Level-Radioactive-Waste Project, Japan

Mamoru Takeda
Senior Managing Director
Dowa Engineering Co. Japan

Discussion with the floor

MONDAY, APRIL 12

OPENING SESSION (9:30–12:15)

Opening Remarks

Special Lectures

Remarks by Dr. Jun-ichi Nishizawa
Chairman of the 32nd JAIF Annual Conference Program Committee

In 1942, Prof. E. Fermi realized the non-military use of atomic energy firstly. However, it had been so lowly evaluated because of the instantaneous combination to the atomic bomb afterwards.

But, I hope to remain in your memory that the late Prof. Tadayoshi Hikosaka published the same idea, earlier than that by Prof. Fermi, in Sendai City where this meeting is being held now, which has not been known.

On the other side, thermal power generation and atomic energy power generation have been alternatively evaluated several times. It is also impressive to us that the serious increase of the concentration of carbon dioxide in the air was warned by Prof. Giichi Yamamoto, who was also a professor of Tohoku University, more than 20 years ago.

Now, Japan is proceeding the application of atomic energy independently, which is reasonable to be warned by many alarms. However, stable supply of the energy for people is the obligation of the government. The foods and energy are indispensable elements as well as water and air to keep the lives of nations. Without love for mind and these for health, people can never live.

Strictly speaking, atomic energy generation should be started after more precise study and careful preparation. If the proposal of Prof. T. Hikosaka had been accepted gently and the preparation had been started the carefully and precisely afterwards, there might have been possibilities to proceed the building of the feeding system of the energy without danger to construct, checking the plan in the same time. Also, if the proposal of Prof. G. Yamamoto had been accepted and checked in orthodox way, non effective rushing to atomic way and from fire power way might have been unnecessary.

Professor committee could not decide to accept the thesis by Prof. T. Hikosaka, or not for several years, it was burned out by the bombing by air force in the war time. Unfortunately it is still usual not to have the ability to evaluate the normal future forecasts and take the countermeasures. In those days, it should have been described as regular, however regrettably it was not.

I, myself, invented and succeeded to develop three sorts of new semiconductor devices, and now earnestly proceed to utilize water-powered and solar photon energy, while I am personally tasking a part of the operation of this meeting unpleasantly, because of the same reasons.

Both based on the same love for the human beings, however, in recent years, careless mistakes against the love for human beings and the royalty for the society through responsibilities are invading the security of advanced society. These should be earnestly being avoided eagerly and fast with every method by every one of us.

Our Challenges for the Future of Nuclear Power

Hiroshi Araki

Chairman, Federation of Electric Power Companies;

President, Tokyo Electric Power Co., Japan

1. Utilities' efforts in a changing business environment, including partial liberalization of the power retailing market
2. Performance of light water reactors, the nuclear workhorse in Japanese power generation
3. Nuclear fuel cycle and back-end measures -- the most important issues now
4. Need to restore public confidence in nuclear power, and to build a national consensus

Korea's Expectation for Nuclear Power Development for 2000 and Beyond

Dr. Young-Sik Jang
President and CEO
Korea Electric Power Corporation
The Republic of Korea

Abstract

Nuclear technology is one of the most important options available to meet the ever growing electricity needs, and its applications are expected to expand yet further. Korea, due to limited energy resource, relies largely on the peaceful use of nuclear energy to sustain continued economic growth. Currently, we have fourteen nuclear units totaling 12 GW in capacity and eight units under construction including two units in North Korea. Last year, we generated a total of 89.7 billion kilowatt-hours of electricity in nuclear power plants which accounts for 41.7 % of the total electric power output. The average capacity factor last year was 90.2% and a number of initiatives have been taken to improve the performance and safety of nuclear power plants.

As the world knows, KEPCO is now involved in constructing nuclear power plants in North Korea. Currently, KEPCO has been performing preliminary preparation works. This project is progressing well and we will open a new chapter in North-South cooperation, peaceful coexistence and enhance economic exchange with the North.

The Korean economy is now at a recovery stage and the electricity consumption rate is increasing to the almost same level as that before the IMF economic crisis. Nuclear power will continue to account for over one third of total power generation and the total generating capacity of nuclear power will almost double by 2015.

According to the restructuring plan of the electric power industry, the power generation sector of KEPCO will be divided into 5 to 7 power affiliates, and then gradually privatized. However, considering the operational safety and the special features of nuclear power generation, the nuclear power sector will remain affiliated with KEPCO.

Our philosophy for nuclear power is peaceful, promoting the generation of efficient electric power without any desire to make nuclear arms. We operate nuclear power plants with a motto "nuclear safety first, economy second". The issue of nuclear safety and the safe management of radioactive materials are common tasks for all of us. In order to ensure the continuous development of nuclear energy, safety and economic viability must be enhanced. Transparency of all nuclear facilities must be ensured to secure public acceptance and support. We will also continuously exchange operational information and increase technical cooperation with international organizations like IAEA, WANO, INPO and with other utility companies to ensure safer and more economic nuclear power operations.

"U.S. Energy Policy and International Cooperation"

Ernest Moniz

Under Secretary, Department of Energy, U.S.A.

The Future of Nuclear Power: Looking Ahead

*Mohamed ElBaradei
Director General
International Atomic Energy Agency*

*Japan Atomic Industrial Forum,
Sendai, 12 April 1999*

SYNOPSIS

Nuclear power is a mature technology for cost effective base load electricity supply and mitigation of greenhouse gas emissions. Rapidly increasing energy demand, growing concern about climate change and considerations of resource security would suggest that nuclear power will continue to play a key role in energy strategies for sustainable development, together with renewable sources, improved fossil fuel conversion and greater efficiency throughout the energy system.

In fact, the share of nuclear power in global electricity generation is declining. In many countries nuclear power is challenged on economic grounds or because of public concerns about nuclear safety including radioactive waste disposal. In the absence of alternative energy sources for environmentally clean large scale power generation, it is essential that the nuclear power option remains open and is given a full and fair consideration. This requires action on two fronts: the restoration of public confidence in the safe and exclusively peaceful use of nuclear energy and the demonstration of economic competitiveness with special attention now to nuclear power plant life management.

Of determining importance is the achievement of a demonstrated global record of safety in nuclear, radiation and radioactive waste management. Nuclear safety is a national responsibility but a global issue. The role of the IAEA is to foster a comprehensive nuclear safety regime in which the international community as a whole benefits from binding conventions, accurate and current safety standards and measures to assist in the application of those conventions and standards. A strong global safety culture, effective national control of all radioactive sources

and timely and transparent public information policies are essential building blocks for public confidence. Much more can be done in this regard.

Concerning the exclusively peaceful use of nuclear energy, the past decade has brought profound international changes but, with respect to nuclear non-proliferation, it is a mixed picture of global hopes but regional tensions. Recent nuclear weapons tests have underscored the need to breathe new life into international and regional non-proliferation and nuclear disarmament efforts. Through its strengthened verification and safeguards activities, the IAEA remains ready to contribute fully to the cause of peace and security.

Economic competitiveness has many dimensions including improved operational efficiency and the application of advanced technology. Information exchange and peer review services such as those provided by the IAEA have made important contributions to improving performance and safety of many existing nuclear plants. But the challenges to nuclear power also require scientific and technical research to improve every component of current nuclear fuel cycle technology and to develop advanced evolutionary and innovative reactor designs. In increasingly deregulated markets, objectives to strive for include new reactor designs with higher efficiency, lower cost and improved safety, and small scale modular plants with passive safety features, multiple applications, short construction times and low capital costs.

In addition, high priority should be placed on new techniques for on-site and surface storage and for underground disposal of nuclear waste. Progress in waste management techniques and policies is particularly urgent. Only when available technical solutions for safe and permanent disposal of wastes are demonstrated, will the public perceive that the waste issue has been resolved.

As the worldwide intergovernmental organization dedicated to nuclear science and technology, the IAEA is guided by three objectives: to assist Member States, particularly developing countries, in the use of nuclear technology; to promote radiation and nuclear safety; and to ensure to the extent possible that pledges related to the exclusively peaceful use of nuclear energy are kept. Strengthened international co-operation is key to meeting each of these objectives.

SESSION 1 (13:30 – 17:00)

"Civilization and Energy Security"

Nations determine their policies on energy based on their particular circumstances, requirements and cultural attitudes. Yet there is an increasing need to deal with energy security issues from a global perspective. Market liberalization is accelerating in the industrialized nations, with a consequent emphasis on economy in their energy-security quests. But there is a serious doubt whether economy-driven policies alone can achieve a long-term stable supply of energy or meet requirements to prevent global warming. In this session, current policies in individual countries and regions will be briefly examined against the backdrop of the global need for energy security. Nuclear energy will thus be evaluated specifically in respect of its environmental advantages and stable supply.

Lectures

Discussion with the floor

"The Middle East: Vital Geopolitical and Strategic Interests"

Judith Kipper

Director, Middle East Forum, U.S. Council on Foreign Relations

Civilization, Energy and Nuclear Power

Yoshihiko Sumi

Executive Vice President, The Kansai Electric Power Co., Inc.

1. Nuclear power in terms of the history of energy and civilization

- The history of the development of scientific technology is the history of the evolution of energy sources. In particular, the technology that utilizes heat as power has helped promote the development of human life and provided human beings with a comfortable way of life. However, the large amount of energy consumption has globally increased the load on the environment.
- Furthermore, since scientific technologies have not spread and developed uniformly on the global scale, a gap between the North and South has been raised. Developing countries are still involved in the problems of poverty and environmental pollution.
- Nuclear power is one of the practical energy options that can solve these problems.

2. Role of Nuclear Power Generation in Japan

- The necessity of nuclear power and corresponding energy policies vary significantly from country to country. These differences are based on such factors as energy dependency, the surrounding environment, and the political conditions in each country.
- As a country lacking in resources and having advanced technologies, Japan is positively promoting nuclear power generation. In order to achieve the aims of the protocol adopted in COP3, Japan will continue positive promotion of nuclear power generation in the future, and have a plan to construct approximately 20 nuclear power plants, for 21 to 25 million kW, by 2010.

3. Tasks for Promotion of Nuclear Power Generation in the 21st Century in Japan

- The tasks that have been brought into focus with the progress of the market economy are how to consider two aspects of electrical utilities: "public services" and "marketability", and how to consider the external costs such as security and environmental costs.
- Considering competition with companies who will enter the market in the future, the cost efficiency of nuclear power generation must be further improved.
- It is also important to appropriately evaluate each electricity source based on a comparison of their total life cycle costs, which includes externality costs.

4. Conclusion

- As the market economy progresses in Japan, it is necessary for Japanese utilities to establish the ways of thinking about two aspects of electrical utilities: "public services" and "marketability", and also the external costs. It is important to share the experiences and knowledge in these fields among various countries.

THE NUCLEAR CONTRIBUTION TO ENERGY SECURITY FOR THE UNITED KINGDOM

Dr S E Ion

Director, Technology & Operations, British Nuclear Fuels
Risley, Warrington, Cheshire, WA3 6AS, United Kingdom
Phone: +44 1925 832152, Fax: +44 1925 833576

Forecasts by various authoritative organisations show that primary energy consumption will continue to increase in order to support global sustainable development. The challenge over the coming years is to provide at least twice as much energy whilst limiting the emission of greenhouse gases, particularly carbon dioxide, in line with international climate commitments. Maintaining this commitment requires a long-term energy mix strategy that takes account of the environmental impact of our energy sources and shifts away from the fossil fuel dependence seen throughout the world. Nuclear power is a well-developed energy source, which already avoids the emission of more than two billion tons of carbon dioxide per year.

The new Government in the United Kingdom has targeted a 20% reduction in carbon dioxide emissions as its response to the Kyoto protocol. It has already acknowledged the potential for future nuclear capacity in meeting this target. The agreements made at Kyoto are perhaps only the beginning of the environmental challenge to energy generation. The nuclear industry already accounts for the overall cost of generation in its price to the electricity market, and similar responsibilities should be placed on the fossil fuel industry to make a comparison of energy sources that accounts for environmental impact.

Nuclear power currently contributes almost 30% of the energy supply within the United Kingdom. British Nuclear Fuels (BNFL) plays a central role in national energy security, through operation of the Magnox power stations and the provision of nuclear fuel cycle services to the other nuclear operators.

However, BNFL's vision and role extend to the global industry, and is perhaps best known in Japan for the transport and reprocessing of spent fuel. We recognise the many challenges that the nuclear industry faces, principally in maximising safety, securing energy supply, managing spent fuel and waste arisings and achieving wider public and political acceptability. Sustainable development relies upon effective management of these issues and responsible management of our resources. BNFL is committed to reprocessing and recycling, supported by the development of fast reactors to achieve optimum utilisation of the uranium resource.

Confidence in the future role of nuclear in the global energy mix should not prevent a continued drive to reduce overall fuel cycle costs. Short-term cost reduction is vital in maintaining this future against the challenge of cheap fossil fuel generation. BNFL's extensive R&D programme includes active research in reprocessing, covering the development of advanced Purex technology as well as alternatives like the molten salts process. Holistic optimisation of the fuel cycle, including maximising safety and managing wastes, is a key element in minimising the forward cost of nuclear generation. BNFL continues to seek opportunities for cost-effective development via collaboration with other research organisations world-wide.

Global energy security will be founded upon responsible national and localised energy policies. There is a clear future role for nuclear generation in attaining energy security whilst achieving international commitments on climate change. BNFL's strategy is to be a leading player in securing this future and achieving global energy security.

Nuclear Power in France : Turning a Weakness into a Strength

by Bertrand BARRÉ

Director of Nuclear Reactors, CEA, France

Vice-chairman of the European Nuclear Society

France is a medium size country enjoying a good climate, a pleasant way of life and a good food, but endowed with very little fossil energy resources. In the 50s and 60s, huge efforts have been made to equip all the promising hydroelectric sites, while domestic coal sources dwindled, and most of the economic growth was fuelled by imported oil. Accordingly, energy dependence grew considerably.

On the other hand, though actual nuclear power implementation and generation had been modest, France had fully developed the necessary scientific, technical and industrial background both for the reactors, including FBRs, and the full fuel cycle.

With the oil crisis, energy dependence became unbearable, and France decided to launch an extremely ambitious program of nuclear power deployment. As a result, the primary energy mix of France consists today of 40% oil, 30% nuclear power, and 30% from all the other energy sources. We cover now 50% of our energy needs from domestic resources... but maintaining such a ratio will prove quite a challenge. In addition, clean nuclear power makes France a very low emitter of greenhouse effect gases among the industrialised countries. Furthermore, the strong standardised nuclear program has constituted the basis upon which the French nuclear industry is exporting throughout the world. We have in effect, through technology, turned our weakness - low fossil reserves - into an asset.

Those achievements, which some people dub « the French exception » even though the Japanese situation, for instance, is quite similar, explain why, apart from the radioactive wastes issue, nuclear power is relatively well supported by the French population.

But energy issues are not limited by national boundaries. During the next few decades, the world population will grow significantly, and the major part of this increase will occur in those regions of the planet which are today low energy users.

Faced with the depletion of fossil resources and the necessity to adopt prudent policies for their combustion because of its possible effect on the global climate, it is hard to imagine any *sustainable development* without some kind of nuclear revival : We must make it happen.

In term of resources, with recycling now and the future use of fast neutron reactors, nuclear power *is* sustainable. Economic competitiveness should not be too difficult to achieve, or regain, after the present « gas bubble ». The real challenge is to secure public confidence, to alleviate fears about safety and proliferation, and to demonstrate an accepted way of disposal for the long-lived radioactive wastes. This is not a list of problems, this is an agenda for actions.

"Security Issues and Nuclear Energy "

Satoshi Morimoto

Senior Researcher, Nomura Research Institute

[M E M O]

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

[M E M O]

TUESDAY, APRIL 13

SESSION 2 (9:00 – 12:00)

"Outlook for Japan's Long-term Program for Nuclear Research and Development"

People have become quite interested in the nuclear power issue, and Japan's Atomic Energy Commission is about to commence a review of the Long-term Program for Research, Development and Utilization of Nuclear Energy in a manner more open to the public. What difference will this make to the long-term program itself, and what degree of understanding will the people of the nation acquire as a result of the open process? At the same time, when it comes to siting nuclear facilities, local authorities and people are calling increasingly for the central government to clarify issues and take responsibility for matters of "national policy." In this session, specific issues of long-term nuclear R&D in relation to overall nuclear energy policy will be discussed not only by nuclear-related people, but by distinguished scholars and commentators, representatives of local municipalities and labor unions.

Panel discussion

Discussion with the floor

"What I think about Japan's Long-term Program for Nuclear Energy R&D"

Soichiro Tahara

Journalist, Japan

PRESENTATION ABSTRACT

Tadao Ishibashi

Attorney at Law

When looking at the "Long-Term Program for Research, Development and Utilization of Nuclear Energy" from outside the "nuclear energy community," I wonder what in the world this program is.

The Long-term Program was formulated by the Atomic Energy Commission (AEC) of Japan concentrating all the efforts of those concerned with nuclear energy, including university professors, utility industries, the nuclear industry, the Power Reactor and Nuclear Fuel Development Corp. (PNC), the Japan Atomic Energy Research Institute, and the Central Research Institute of Electric Power Industry. When this Program was completed, it looked like a piece of art: namely, the perfect system of science and technology. At the time of review after five years, however, it already revealed some of its shortcomings, and ten years after the formulation, the Program almost lost its luster, changing into a mere shadow.

The Long-term Program revised in 1987, for example, set up the reactor strategy, "from LWRs (light water reactors) to FBRs (fast breeder reactors), aiming at closing nuclear cycle based on reprocessing of spent fuel and recycling of separated plutonium. However, because of the surfacing of the problems inherent in the plutonium recycling policy, I have to say the 1994 Program reviews and this year ended up simply the settlement of those problems. (This was true of ATRs (advanced thermal reactors), commercial reprocessing plants, FBRs, and high level radioactive waste.)

Wasn't the revision of the Long-Term Program essentially the review of nuclear energy policy in response to the progress of science and technology and the changes in domestic and foreign political, economic and social conditions? It would be necessary to consider why the fundamental policy, which was completed by the nuclear industry's highest authority even staying overnight, has crumbled so easily. It is also a problem that there was little accountability for this issue.

Meanwhile, various rumors have spread about the conflicts between the Ministry of International Trade and Industry (MITI) and the Science and Technology Agency (STA). The relation between MITI and STA is however hard to understand from outside. For example,

when the Subcommittee on Nuclear Energy of the Advisory Committee for Energy at MITI summed up "Nuclear Vision" in 1986, eleven members of the Subcommittee also served as the members of the AEC's Advisory Committee on Long-term Program.

Under such a situation, we will have to discuss what is the AEC rather than the Long-term Program itself. Plainly speaking, what would happen if it were not for the Long-term Program or the AEC? I sometimes think that we could do without both the Long-term Program and the AEC, if they just fight for their jurisdiction without listening to the opinions of people.

The nuclear policy looking at the twenty-first century is nothing new, because the Long-term Program in 1986 already included such an approach, and the thorough review of the Program was debated whenever necessary, not to mention Oshima Report. I personally think that if the AEC and the Nuclear Safety Commission move to the Prime Minister's Office as they are, there will be no reason for their existence. And such a move would be a temporary measure which will vanish sooner or later. I would like to make a proposal about this matter at the panel.

Hiroyuki Torii

Editorial Writer, The Nihon Keizai Shimbun

Tadayuki Murakami

Department Director, Department of Economic and Social Policy
Japanese Trade Union Confederation

What do we expect for "the Long Term Program of Nuclear policy" ?

Susumu YODA

President, Central Research Institute of Electric Power industry

1. The decisive role of the nuclear development for the better solution of "Tri-lemma" issues

We are struggling for the better solution to fulfill following contradictory issues at the same time, i.e. the economic development, preservation of the energy resources and global environmental protection. And now it is indispensable to find clear and decisive answers to this "Tri-lemma" issue for the well-being of next generations. Our Japanese society, lacking in natural energy resources and hence importing almost all of them from abroad, has to seek every way for the rational use of energy and for the development of renewable energy resources. In this respect we'd like to place our importance on the further development of the use of nuclear energy, which is able to contribute to the preservation of the environment, as one of the most realistic and reliable choices.

2. What does our history of the nuclear development in Japan imply ?

More than twenty years have passed since the first operation of the commercial nuclear power plant in Japan. In early 60s we introduced LWR technology from abroad as a "proven" technology, however, the way to master the heart of the technology had been steep. With our tremendous efforts to overcome various difficulties over two decades, nowadays almost one third of the total electric demands is covered by nuclear power with 51 units of the LWR. In these years we made steady developments not only in the construction of nuclear fuel cycle facilities but also in the establishment of so called back-end policies. However, much more stress has to be placed now on the efforts to find better relations between the nuclear development and the public, who tends to have vague worry about the nuclear development especially after Monju "affairs" etc..

3. Toward our further development in 21st Century

Although nuclear power is one of the most effective alternatives for the solution of the global environmental issues, cost effectiveness of the development is to be attained by way of the standardization of the system and a new material development, which help attain best mix of the energy resources in a global context.

[M E M O]

[M E M O]

LUNCHEON (12:15–14:15)

Reception Hall "Sakura," Sendai International Center

Remarks

Special lecture

The Nature of Japanese Culture

Tetsuro Morimoto

It goes without saying that the culture of any people is shaped by contacts with other cultures. In the case of Japan, those other cultures have been China in ancient times, European countries in more modern times, and the United States after World War II. Learning much from those advanced nations, Japan digested and then fermented the lessons, incorporating them into its own unique culture.

Superficially, lifestyles and social systems in modern Japan are not largely different from those in the West. Some in the U.S. once ascribed various trade frictions to the "differentness" of Japan. That view itself can be taken as an expression of American surprise and irritation -- that "Japan has Westernized to this extent, but still . . ."

What, then, is the nature of Japanese culture?

Missionary Luis Frois, who came to Japan in the 16th century, compared Japan with Europe and, based on his own experiences, left a record of over 900 items that he said were directly opposite. One of those was: "The Japanese like ambiguous words, and Europeans respect clear words."

I think it is this "ambiguity" that is the main characteristic of Japanese culture. Looking back at Japanese history since the Jomon Era, I will speak about why and how this trait emerged.

[M E M O]

SESSION 3 (14:30 – 17:30)

"Information Disclosure and Communications with the Public

The Information Disclosure Act is likely to be enacted in the current Diet session, and the Japan Fuel Cycle Development Institute is already pursuing a policy of information disclosure based on its own guidelines. The purpose is to ensure transparency, based on which public understanding and confidence can be built. It is, however, still necessary to provide information in a way more readily understandable to people in all segments of society. The session will address access to information; disclosure of information on accidents and problems; non-disclosure, as, for example, when a matter of physical protection; and information exchanges between power-producing and power-consuming areas. The best means to provide information will be pursued.

Panel discussion

Discussion with the floor

Information Disclosure in Japan Nuclear Cycle Development Institute

Isamu Sasaya

Executive Director

Japan Nuclear Cycle Development Institute

Japan Nuclear Cycle Development Institute(JNC) is making efforts to regain public's understanding and trust, after a sodium leakage accident at the prototype fast breeder reactor Monju. Moving towards broader information disclosure and transparency of our organization's activities is an important step that JNC must take to regain the public's understanding and confidence. Recognizing the need to transition to more openness, we have initiated numerous reforms designed to positively change the consciousness and promote information disclosure among all staffs in the organization. JNC established a Guideline on Information Disclosure in July 1997 and the application was started since then. New organization was inaugurated in October 1998. JNC is doing its best to promote information disclosure, and we are diligently proceeding toward "Open JNC".

The fundamental premise of the Guideline on Information Disclosure is to make all information available to the public regarding JNC's principal activities, excluding, non-proliferation, and physical protection, as well as private information, etc. We also disclose our information fairly and timely based on the review by the Information Disclosure Committee whose membership includes respected members of the professional community outside JNC. The discussion of the Information Disclosure Committee is open to the public and the deliberation results are disseminated through the Internet and by other means.

There have been about 400 requests for information disclosure since July 1997. All requests are deliberated and examined according to the "Guideline on Information Disclosure". Almost all of the requests have been judged to be as disclosable, demonstrating our spirit of openness. About 30 remaining requests are being deliberated at the present time. There are numerous materials produced by ourselves, other collaborating research and development organizations not only in Japan, but also in overseas countries. The information has been disclosed after receiving confirmation of our intention from those partners beforehand.

In terms of promoting future information disclosure activities, policies, on the information disclosure of JNC facilities, as well as disclosure of bilateral communications information with other institutions are under development. From this standpoint, JNC is aiming at "transparent management outlook." Additionally, we are looking for solutions to issues such as a reduction of examination fee that decreases the burden of an information discloser. We will continue these discussions in the Information Disclosure Committee in the future, while monitoring the deliberation regarding the Information Disclosure Law of the administrative organization in the Diet.

We thus actively promote the activity of information disclosure at JNC, striving to become an organization which is open to society.

The Risk Society and the Free Access to Information

- from persuasion tool toward active democracy

IIDA, Tetsunari

Japan Research Institute, Dept. of Environment & Energy Policy Studies
also, Peoples' Forum 2001(Non-profit organization), Lund University (Sweden)

1. "Free Access to Information" in the Japanese Society - as a tool for persuasion

Japanese Government, i.e. bureaucracy, regards "the free access to information" only as a tool for persuasion toward the public. This view is originated from some of bureaucratic nature such as their myth that promotion of nuclear power is the right decision, their technocratic mind, and their flawless myth. Also, this view reveals their mind regarding people only as a "subject" of policies and their nature of obscurantist.

In spite that quite many objections and rational alternatives against nuclear power as a energy policy have been coming up with, the nuclear bureaucracy has been sticking to self-righteous attitude for nuclear promotion policy. This must be examined from the view-point of their ability of self-reflectiveness.

2. Necessity of the "3C processes" - from "Industrial society" toward "Risk society"

Ulrich Beck defined these decades as a transition period from "industrial society" toward "risk society". Modern society and its political system has been established historically with conflict over the distribution of the wealth. However, the risk, mostly produced from large science and technology, has been more important in the post-modern political scenery because such risk can easily go across boarders and generations which would make it difficult to treat under the existing political system.

Thus, it is requested to develop new political system to intervene the conflict over the risk distribution in the society. For that purpose, "3C processes", i.e. Concerning, Contracting and Complying as a hint for new

political system has been being focused on. We shall develop such process, with including appropriate stake-holders for each political agenda from local level to global. We can observe some of such trials in the EU, for example, consensus conference in Denmark and Local Agenda 21 in Sweden.

3. "Free Access to Information" for active democracy

In the "risk society", the free access to information shall be reconstructed from "decide and persuasion" structure to "proposal and agreement" structure. Along such structural change, the quality and measure of the free access to information must be re-organized and "accountability" would be key word of such transformation. Policy process must be reconstructed at the same time.

4. Beyond "mura" society in Japan

From the context of a transition period from "industrial society" toward "risk society", Japanese society is far behind. We have been still keeping "mura" nature in the society, animism-like culture in the Japanese old village, typically shown in nuclear society. This "mura" nature in the society often make various barriers against the challenge for new social systems, such as ritual democracy in the public hearing and the safety assessment, bureaucratic command & control manner, and instrumentarism by the techno-bureaucracy.

Our future would depend on if we could overcome the negative aspect of our "mura" nature in the society, and develop new social system toward the risk society.

Kiyotake Inaba
Professor, Gunma University

PANELIST'S PRESENTATION

Michio KAKUTA (Nuclear Information Center)

I will focus my opinion on the following two topics.

(1) Freedom of Information and The Physical Protection of Nuclear Material

To assure the nuclear non proliferation policy, the following two measures have been internationally taken; (a) Nuclear Safeguard, (b) Physical Protection of Nuclear Material. The former consists of the accounting system for nuclear material and the international inspection system, thus it requires non-nuclear-weapon-states to open certain information on domestic nuclear activities. The latter, called PP, requires nuclear facilities in non-nuclear-weapon-states to provide physical barriers to protect from theft of nuclear material. The PP sometimes requires the determination of trustworthiness of those persons involved and requires that security measures are taken for sensitive nuclear information. In Japan, under the name of PP, some data in the safety analysis reports for construction permit of nuclear power plants and related facilities have been made blank for public perusal. As a recent example the transportation information of the MOX fuel returned from Europe to Japan was made considerably secret. The national regulations and the company's measures for PP are often opaque, and is said "the concrete measure for PP is itself a secret."

I think the range of restriction for information not to open for PP should be limited to the minimum, especially when it relates to public safety. To protect the right to know of concerned persons I'd like to propose a third party organization to examine and certify the information specified by a government organization or a company to be closed.

(2) Freedom of Information and the Protection of the Whistleblower

The matters of data forgery in the process of machine production in the nuclear industry were reported recently in Japan. In these matters the forged information was closely related to nuclear safety. The facts were disclosed by anonymous letters. In the

design, construction and operation of nuclear facilities, it is quite natural that the best informed person on the unsafe technical problem or data forgery is the plant worker. The best way, I think, is to improve the work based on the proposal by the worker. In the Japanese social climate, whistle-blowing by plant workers may meet various difficulties.

In the US, legislation for the protection of whistleblowers in the nuclear industry was made (Energy Reorganization Act of 1974). The NRC has the responsibility for implementing the Act. The employee who suffers from harassment or intimidation by his employer due to his whistleblowing can request an investigation and remedy by the NRC.

I'd like to propose that a similar protection system for whistleblowing should be established in Japan including a new legislation.

Takao Shiokoshi
Editor in Chief, The To-o Nippo Press

Zenjiro Suda
Mayor of Onagawa Town

Information Disclosure and Bilateral Information Exchange

Hideo Yakabe

Director and General Manager

Plant Siting and Public Relations Department

Japan Nuclear Fuel Limited

1. What is Information Disclosure?

- The "principle of disclosure" for the peaceful uses of nuclear energy is enshrined in the Atomic Energy Fundamental Act. The utility industry has made concerted efforts to actively disclose information, especially as it relates to safety.

- Nuclear terminology, however, is often puzzling. In addition, the industry appears to have concentrated too much on arguing safety and necessity. This is not true "transparency," not information that is "easy to understand" -- both of which are needed if the public is to feel secure about nuclear power, and if there is to be mutual confidence between the people in the siting areas and the facilities. The companies should reflect upon this.

2. Disclosure of Information on the Nuclear Fuel Cycle Business

- In the nuclear fuel cycle business, ideally, safety-related information should exist in full view of the people. In the spirit of "information disclosure," this is the true sense of providing information, and will be a key to operating the nuclear fuel cycle business smoothly over the long term.

- To that end, our company endeavors diligently to make the details of its business available to the public, issuing, for example, more than a hundred press releases a year. I think our basic stance on information disclosure is very well developed, but, unfortunately, the general public does not always view the situation the same way. We will continue our efforts.

- Recognizing further that information will have to be provided in emergencies, when there are other problems of one kind or another, and in special circumstances drawing public attention, such as the transporting of nuclear materials, the company is now studying past cases and working to develop prompt disclosure procedures.

- When spent fuel was transported last October, some control over information was required by international rules, including physical protection treaties. The company's information control system, too, will be reviewed.

- It is also true that the mass media sometimes get into a frenzy in their quest for "scoops." The media's understanding of the need to control some information, and their cooperation, would be appreciated.

3. Conclusion

- In order to promote effective information disclosure, the providers and the receivers of the information should share a common commitment. That is, while it is important for the providers to present the information in a simple manner so that the receivers can readily understand it -- rather than be satisfied with having provided something, whether it is meaningful or not -- the receivers must get involved in the energy debate, must think about it on a daily basis -- including the educational environment -- and make the effort to understand the issues correctly.

- Our company's information receivers are primarily the people of Aomori, and then the nation in a broader sense. Through association and communication, we want to understand the kind of information they seek, and then -- through the large-caliber conduit of bilateral information exchange -- provide it in a way that brings the receivers a sense of ease and confidence, resulting ultimately in the smooth, steady operation of nuclear fuel cycle business activities.

[M E M O]

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[M E M O]

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PUBLIC TALKS (17:45–19:45)

"Nuclear Energy Policy: A Local Perspective"

at Tachibana Conference Hall, Sendai International Center

In nuclear development, there has always been a gap between the central government on the one hand, and local authorities and people at the siting areas on the other. Efforts have been made to narrow the distance, but, as shown in the results of the citizens' referendum in the town of Maki, it appears the sides may be moving farther apart. Now, people in the siting communities themselves are airing their opinions on energy policy and nuclear power. In this session, participants including the general public and nuclear professionals will exchange views on how local areas can get more involved in national nuclear energy policy.

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[M E M O]

WEDNESDAY, APRIL 14

SESSION 4 (9:00 – 12:00)

"FBR "Monju" and its Future and Plutonium Recycling"

Since the sodium leakage at Monju, whether fast breeder reactor (FBR) development should be continued or not has been the subject of much discussion in Japan. Use of plutonium in light water reactors is to be commenced. In this session, the recycling of plutonium, for which expectations are high in terms of national energy security, will be discussed in terms of future circumstances, the need for FBR's, the possibilities for commercial use, economy, and the peaceful application of plutonium from dismantled weapons. The role of Monju and the resumption of operations will also be discussed.

Panel discussion

Discussion with the floor

JNC's Research & Development Activities on Pu recycling
- Outline of JNC's Medium- and Long-Term Operation Plan -
Yasumasa Togo
President, Japan Nuclear Cycle Development Institute (JNC)

1. JNC's Medium- and Long-Term Operation Plan

JNC was established as a governmental corporation on October 1, 1998 to take over operations from PNC. Taking into account of duties with regard to operations, special emphasis was placed on a) optimal allocation of resources for securing safety, b) disclosure of information, c) efficient allocation of personnel and budget for ensuring rational and efficient administration, d) communication with neighboring local communities, domestic and international societies. Recently, JNC has drawn up the first Medium- and Long-Term Operation Plan, which outlines JNC's operation over the next five years toward the 21st century.

2. JNC's Research & Development Activities on Pu recycling

Premised on the assurance of safety, JNC will pursue R&D on FBR and related fuel cycle technology with the goals of economic viability, effective use of resources, harmonization with the environmental requirements, and nuclear nonproliferation, and steadily perfect competitive, practical technologies. JNC will make efforts to get the supports among the local community to bring back Monju on line as soon as possible.

In the medium-term, it will place top priority on R&D programs for improving economic viability with the aim of establishing technologies for power generation system through Monju and making FBR cycle technologies practical. Strategy investigation study for commercializing FBR cycle will be started to prepare the reference materials of various FBR cycle options to identify the future FBR deployment strategy.

In the long-term, JNC will work to develop methods of burning transuranic nuclides (TRU), transmuting long-lived fission products (FP), and other technologies that will reduce the burden that the FBR cycle places on the environment.

In the field of LWR fuel cycle technology, progress is being made toward the operation of a commercial nuclear power facility (uranium enrichment, reprocessing) by private companies, and a project to use plutonium in a LWR facility (plutonium-thermal project) is about to come on line. To ensure that these operations proceed smoothly, it is important for JNC to steadily pursue its on-going R&D programs and to smoothly transfer the results of that work.

The Current Status and Role of Monju

Saburo Kikuchi

Executive Director, Japan Nuclear Cycle Development Institute (JNC)

1. Current Status of Monju

A thorough investigation has been carried out of the sodium leak accident which occurred on 8 December 1995, followed by an extensive review of safety which was concluded in May 1998.

Countermeasures against sodium leaks have been studied, some improvements to the plant have been proposed and designs drawn up. Thus, the technical preparation required before seeking approval to conduct the improvement work are now complete.

Periodic inspection and routine maintenance have continued in order to ensure the safety and serviceability of the plant. Considerable effort has been devoted to promoting public acceptance of Monju, including open symposiums, local forums, site tours, and participation in local events.

2. The Role of Monju

- (1) In view of the resource constraints and increasingly serious global environmental problems predicted for the 21st century, the development of the Fast Breeder Reactor (FBR) to increase the efficiency of plutonium utilization is indispensable. Long-term operational experience and continuing technical advancement are a necessary part of the commercialization of a reactor system, as the history of LWR's proves, and Monju will make a major contribution to FBR development after operation resumes
- (2) Monju will be used to confirm the basic principles of fuel, core and plant design, and to gain experience in sodium technology. Monju will also be used to introduce and evaluate new technologies developed for the commercialization of FBR's.
- (3) Monju can be used as a fast neutron irradiation facility and as a tool to demonstrate the safety and reliability of innovative concepts in several fields, including the nuclear fuel cycle.
- (4) International cooperation will be actively pursued both to benefit from previous experience overseas and to promote new technologies developed in Japan. The data and knowledge gained from the operation of Monju have a worldwide value in the development of stable energy supplies.

Thus Monju plays an important role at each stage in the commercialization of the FBR:

- | | | | |
|------------|---------------------|---|---|
| ①Stage 1 – | (until around 2010) | – | demonstration of basic FBR power plant technology |
| ②Stage 2 – | (until around 2020) | – | demonstration of innovative technology to improve the cost-effectiveness of the FBR |
| ③Stage 3 – | (until around 2025) | – | demonstration of commercial FBR technology |

Jean-Louis Ricaud
Senior Vice President, COGEMA

**Restarting the operation of “Monju,” the fast breeder reactor
and the future of plutonium recycle and fast breeder reactors**

Hiroko Sumita
Attorney at Law

1 On the report of the Special Committee on Fast Breeder Reactors issued in 1997

As a member of the above-mentioned committee, I would like to reassert the following position expressed in its report issued in 1997.

(1) It is appropriate to make further use of atomic energy as one of energy resources in the twenty-first century. In utilizing atomic energy, it is prerequisite to restrict its purposes to non-military ones in accordance with the provisions of the Basic Law on Atomic Energy, a legislation of Japan. It should be also noted that it is a matter of great significance to gain the trust of our society to atomic energy technology through the efforts of responsible personnel to implement sufficient safety measures to prevent any possible accident, to disclose relevant information timely and so on.

(2) While our country makes use of light water reactor technology which would be undoubtedly described as matured one, it is necessary to pursue FBR research and development for our country from a viewpoint of long term energy policy since our country has consumed a lot of energy and would do so in the foreseeable future.

I believe our country should try to make a contribution to the world through the FBR research and development.

(3) It is fair to say that FBR technology can be the most reliable method of utilizing atomic energy to generate electricity, and may be one of the alternative to the fossil fuel energy in the future.

I believe further research and development of FBR technology and further study into its social consequences should be promoted to get to the fair estimation of the feasibility of FBR in our country.

I would like to point out the matters which deserve most serious consideration as follows.

- a) implementation of sufficient safety measures to prevent any possible accident which could be caused in the operation of FBR.
- b) gaining understanding and consensus of opinion of FBR among the people in our country, especially among the residents in the vicinity of the existing FBR.
- c) keeping the concerned personnel well aware of cost effectiveness, flexibility and also of social consequences of the research and development program.
- d) promotion of non-proliferation of nuclear weapons.

2 My concerns about nuclear energy development from the social viewpoint.

I would like to make mention of following issues in relation to the situation after the submission of the report.

- (1) Are the responsible personnel trying adequately to insure the safety of FBR and to gain the trust and understanding of the people in our country, especially of the residents in the vicinity of the existing FBR ?

I am gravely concerned over the forgery of the result of the container examination, which might be an indication of the remaining secretiveness of the personnel engaged in nuclear-related industry.

- (2) In relation to the commencement of plutonium use in thermal neutron reactor, have they solved its cost effectiveness problem?
- (3) On the extension of the period of building new nuclear power plants or is it based upon convincing grounds in relation to cost-effectiveness and safety?
- (4) Do they make every effort to develop new energy resources other than FBR technology?
- (5) Although making use of atomic energy is evidently one of the most effective means to cope with the global warming problem, we should from a fair estimate of its advantages and disadvantages all the time.

“The Restart of ‘Monju’, the Future of Plutonium Recycling and FBR”

Katsuya Tomono
Executive Vice President
Tokyo Electric Power Company

1. The Role FBR Development

“Special Committee on FBR” of Atomic Energy Commission held after the Monju accident concluded that continuing the research and development of FBR would be adequate as to preserve a viable option of non-fossil energy sources. This conclusion could be regarded as to reaffirm that the Japan’s circumstances in regard to energy supply and demand have not changed essentially. It also would mean that the importance of establishing our country’s energy security on the basis of our technology and the long-term significance of FBR development have not changed even after the Monju accident.

2. The Need for Reform

Many people recently advocate a need to change our social mind-set from present patterns. It calls for a change from follower to avant-courier, and the need to reform our social structure as such. Pioneer of any development program in anyplace has to move forward under highly uncertain conditions, and we are moving into such an arena. In the past, satisfying results would have been warranted if we had made only concerted efforts focused on a single target established through modeling what leading nations had already achieved. The report of the PNC Reform Study Committee emphasizes that the problem is tracked down to the point that we need to change those. We ought to reform the FBR development program in line with this viewpoint.

The future FBR development program should reflect on, and adequately accommodate to recent changes in surrounding nuclear power. Those include economic globalization, deregulation of utility industries, cost reduction in light water reactor, actual cost in backend of fuel cycle such as reprocessing, and the supply and demand conditions of other energy resources. We have to be prepared to properly handle uncertainties in future.

“Special Committee on FBR” also recommended that the construction program of the demonstration plant of FBR is determined after examining the operating experience and results of research and development work at Monju. Our nuclear energy development programs should also be remodeled so as to manage future risks rather than pursuing sole preset objective. Each program should desirably include multiple options for proceeding towards the desired result. The FBR development program will have to flexibly deal with future changes in conditions by switching courses as necessary.

3. FBR Development in Future

We should make an effort to resume the operation of Monju as soon as possible after verifying its safety, because it has a serious bearing on future FBR development.

The commercialization of FBR can be materialized only when it is found to be justifiable economically in our market in competition with light water reactors and other power supply sources which are anticipated to undergo further cost reduction. From such an economic point of view, the FBR demonstration reactor being studied by electric power companies and the current reprocessing technology have not sufficiently achieved their goals yet, and further cost reductions are required. Since the FBR is a type of nuclear reactor which inherently requires reprocessing of spent fuel, it is necessary for us to realize better economic performance in the reprocessing operation through incorporating it into the FBR system, which combines the reactor and the fuel cycle comprehensively. In order to accomplish that, I believe that we need to devise a scenario that will bring about a breakthrough in our development of the FBR system and that we should effectively utilize international cooperation programs. We must also reinforce the cooperative relationships between the JNC and electric utility companies more than ever to advance the development concertedly.

Is There a Future for Plutonium Use?

Hiromichi Yokoyama

Editorial Writer, the Mainichi Newspapers

Current Situation

- To secure a stable supply of energy and make the most effective use of existing uranium resources, Japan has long regarded the nuclear fuel cycle as the heart of its nuclear policy: burning in fast breeder and light water reactors the plutonium recovered from spent fuel.
- There are, however, many difficulties associated with the use of plutonium, and in the U.S. and other Western nations the accelerating trend is to abandon spent-fuel reprocessing and plutonium use in FBR's.
- In Japan, although people involved with the nuclear industry have been insisting that such decisions in other countries have nothing to do with Japan, unexpected events have occurred here, too: In December, 1995, sodium leaked at Monju; in March, 1997, there was a fire and explosion at the Tokai Reprocessing Plant.
- Then, immediately after the Power Reactor and Nuclear Fuel Development Corp. was reborn as the Japan Nuclear Cycle Development Institute, it emerged that manufacturing data on spent fuel transport containers had been falsified.

Nuclear Industry Remains Determined

- Although the Atomic Energy Commission and the Science and Technology Agency reflected upon what happened, they did not review the nation's plutonium policy. Rather, in June, 1997, the commission abruptly released its chairman's comment: "The importance of the nuclear fuel cycle has not changed at all."
- The Japan Nuclear Cycle Development Institute intends to carry on its work toward commercialization of fast breeder reactors on the premise that fast breeder reactors and related aspects of the nuclear fuel cycle are desired.

What Should Be Done

- The plutonium-use effort is deadlocked. Now is the time to discuss all options openly, including the possibility of giving up the nuclear fuel cycle program and abandoning plutonium use.
- Resumption of operations at Monju will not be easy.
- Will MOX use really be so problem free? Are we wise to depend on that?
- Why can't we use a little more of the national budget to develop renewable energies, including photovoltaic cells, and wind and geothermal power, rather than plutonium?
- Let's move this discussion into the public arena -- out of the "family" of nuclear proponents.
- Shouldn't the government and utility companies be honest and say: "Nuclear siting and plutonium use are both difficult. By such-and-such a year, only such-and-such amount of electricity can be supplied. The rest will require energy conservation."

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SESSION 5 (13:30 – 16:30)

"HLW Disposal and the Challenges"

High-level radioactive waste disposal is said to be the final nuclear issue. An implementing body will be designated by the year 2000, to begin construction of a facility in the mid-2020's, and commence operations somewhere around 2030 to the mid-2040's. In this, a positive co-existence with the local municipality at the siting area is one of the most important requirements. In this session, the question of how a disposal facility can contribute to local development in the true sense, and activities to that end, will be taken up. Issues such as how to site the facility, and how to organize and carry on the disposal business, will be discussed.

Panel discussion

Discussion with the floor

Yoshihiko Sasaki
Deputy Director General
Agency of Natural Resources and Energy
Ministry of International Trade and Industry

Brief summary of presentation for Session 5

By Mr. Antoine Allemersch
Vice President, Regional Council of Haute Marne, France

«When convincing others, one must be convinced himself of the project.»

That was my motto when I started to be involved in the project of France's first high level waste disposal research laboratory, because my region became one of the candidates for the site.

The project is based upon the law of December 30th , 1991, so-called Bataille's Law.

The three principal points of this law can be summarized as follows:

- Research on the transmutation
- Make the life of storage canister longer
- Possibility of retrievable storage

As a representative of the local community, I have thought that three following aspects are important:

- Responsibility for the future generations
- Retrievability
- Development of a science development project

In Session 5, I will talk about my experience to convince the people of the region of the project. I will also talk about the difficulty I encountered and finally my hope inspired by the dimension of this project.

Disposal of High-level Radioactive Waste

Teruyuki Aoki
Managing Director
Chubu Electric Power Co., Inc.

Among nuclear fuel cycle back-end measures, disposal of high-level radioactive waste poses the greatest problem for advancing the development of nuclear power and, as electric utilities, we have made efforts to solve the problem. These measures involve a number of problems that have to be addressed as quickly as possible; they are, to name only a few: creation of an implementing entity responsible for disposal, securing of funds for disposal, and selection of a site for disposal. To solve these problems, we in the electric utilities will assume the responsibility of the waste producers and address these problems steadily.

Recently, however, many calls have been made for a national fuel cycle back-end policy at discussion meetings of the Special Committee on High-Level Radioactive Waste Disposal and the Nuclear Subcommittee of the Advisory Committee for Energy. In addition, high-level radioactive waste disposal is a long-lasting operation and there is no country in the world where such disposal is actually in operation. Based on the recognition of such circumstances, we believe that, in the effort to secure a location for a repository in particular, the national government and the electric utilities must strongly support the implementing entity to be created; otherwise, it would be difficult to solve all of the previously mentioned problems. The support and cooperation of the national government is therefore essential, more than ever.

In order to obtain the understanding of the people regarding the necessity and safety of geological disposal, we think it essential for the electric utilities, the national government, and the implementing entity to cooperate with one another in further promoting their PA-related activities through disclosure of information and securing of transparency.

Regarding the securing of funds for disposal, we think, based on the burden-on-beneficiary principle and the principle of fairness between generations, that the means for securing the fund should be legally established as quickly as possible, i.e. the funds should be raised as part of the electricity cost.

Keiji Kojima

Professor Emeritus, University of Tokyo

How the disposal of high-level radioactive waste should be?

Michio Suzuki

Managing Director

Steering Committee on High-Level-Radioactive-Waste Project(SHP)

1. The issue on the disposal of radioactive waste should be solved by our generation who practically benefits from Nuclear Energy. To find solution for this issue would surely bring assurance for the utilization of Nuclear Energy for our subsequent future generation.
It has repeatedly been discussed as to why the Geological Disposal should be required. Whilst we fully recognize that there are arguments that the long term storage would be enough for this issue, the storage should not be a permanent solution. It is true in saying that it is necessary to store the waste in a safe manner until they are ready for the disposal, however, it is our view that such waste should eventually be disposed of.
2. Japan is said to be 10~20 years behind other major foreign countries in this field. We agree with the delay of decision concerning financing or setting up the implementation organization. However, it should be noted that the significant effort is currently being done among Japanese government and waste producers to realize this "Implementation Organization" in time for the year 2000.
It is the task of "Implementation Organization" to ensure the proper undertaking of disposal business to the Public, and to gain the reliability for the disposal business from the Public. For these purposes "Implementation Organization" should guarantee the long-term stability, and thus any adverse event such as bankruptcy or dissolution shall be far from acceptable. Furthermore, while we agree that the Implementation organization is required to be operated in an efficient manner, we consider such organization should not be a profit-making corporation. The reason is that this kind of business would never bring new economical property. A great amount of Income tax (corporate tax) is possibly derived from the operation of the business or from the interest gained by an investment of the collected funds. The tax could be reduced if the organization would be a non-profit corporation who is allowed to receive special taxation measure. It is obviously desirable to reduce burden for customers who would possibly pay disposal costs through electricity fee.
3. There exists an opinion that we should adopt partitioning and transmutation as a measure for HLW disposal. Even though "partitioning and transmutation" might reduce the burden of the geological disposal in a degree, we believe it does not supersede the necessity of geological disposal.
4. Implementation Organization, once it has been established, should soon start the selection of the repository site. For this purpose, technical concepts to support site selection or safety evaluation and so on are expected to be established before setting up the implementation organization.
Siting is the most challenging task for this business. What is the best way to gain broad support of the public with respect to the selection of repository site? Although the contribution to the local community should be necessary, it is not so easy to cope with in a systematical manner, because each of communities would have their requirements. How to overcome siting is a worldwide issue.

Disposal Site for High-Level Radioactive Waste

Mamoru Takeda
Senior Managing Director, Dowa Engineering Co.

1. Image of a Disposal Site

If thought of in terms of existing types of businesses, the closest comparison is a mine. Compared with the operation of a mine, however, management of a disposal site can be relatively simple.

2. Nature of the Coexistence Between Local Communities and Japanese Mines

Most Japanese mines have closed because they were not cost-competitive with others overseas. Those that have survived were created first as mines; the communities (towns) grew later. Coexistence was thus "automatically" achieved. Facilities required for the mines became the infrastructure for the communities. Workers at the mines became the local residents. Coexistence was natural.

3. Nature of the Coexistence at a Disposal Site

Coexistence at a disposal site broken down into four broad categories:

(1) Company and Local People

Local people will naturally desire that the disposal business run smoothly and not disrupt the community; that stable employment be available; and that their ideas and concerns be reflected in the operation of the business.

(2) Beneficiaries of Electricity and Local People

Local people will not want to sacrifice or suffer one-sidedly. They will want the beneficiaries of the electricity to face the issues of the disposal site together with them. The beneficiaries, on the other hand, will not want construction expenses to be unnecessarily high.

(3) Disposal Site and the Natural Environment

Apart from the issue of radioactivity, construction of the facility under the ground will be effective in minimizing the visible effects.

(4) Our Generation and the Generations to Come

Circumstances, including technology, change with time. Future generations responsible for the disposal site will naturally prefer a high degree of freedom and flexibility in the options available to them.

4. Disposal Site Coexisting with Local People

Key points:

- (1) A disposal site that can be managed easily with basic technology
- (2) A system to construct and operate the disposal site satisfactorily to the local people
- (3) A system to promote participation by the beneficiaries of electricity in the construction and operation of the disposal site
- (4) Installation of facilities to support (2) and (3) above

The Second Progress Report on HLW Geological Disposal in Japan

Sumio MASUDA

Director, Geological Isolation Research Project
Japan Nuclear Cycle Development Institute (JNC)

Disposal Concept in Japan

The concept of geological disposal in Japan is similar to that in other countries, being based on a multibarrier system which combines the natural geological environment with the engineered barrier system (EBS). The approach to repository concept development has targeted neither a particular type of rock nor a particular area. Particular consideration is given to the long-term stability of the geological environment, taking into account the fact that Japan is located in a technically active zone. The multibarrier system consisting of an EBS (vitrified waste, overpack and buffer material) and the natural barrier provided by the surrounding rock formations is expected to have the following safety functions.

- Deep geological environment physically isolates the vitrified waste and provides favourable conditions for the EBS to function.
- Vitrified waste incorporates radionuclides into a stable glass matrix and restricts leaching of nuclides into the groundwater.
- The overpack prevents vitrified waste from coming into contact with the groundwater for a certain period of time.
- Low-permeability buffer materials control groundwater flow in the EBS, ensuring an extremely slow rate of diffusive release of radionuclides. In addition, they sorb dissolved radionuclides, act as a filter for colloidal material and delay migration.
- The composition of many deep groundwaters is strongly reducing and the porewater chemistry will be established by the interaction between inflowing natural groundwater and minerals in the buffer materials. Many radionuclides have particularly low solubilities and the overpack longevity is enhanced under such conditions.
- Groundwater flow is typically slow in deep rock formations. In addition, the sorbing characteristics of rock limit the rate of migration of radionuclides. Nuclides in the groundwater are also dispersed and diluted during groundwater flow. If these safety functions of the geological disposal system are assured, minor amounts of radioactivity released from the EBS will further decay and concentrations will be reduced by dilution during the long migration period in the geosphere. HLW disposal can thus be realized in such a way that no significant detrimental influence is exerted on either man or his environment.

The Second Progress Report

In AEC (the Atomic Energy Commission of Japan) Guidelines entitled "Guidelines on Research and Development Relating to Geological Disposal of High-Level Radioactive Waste in Japan", which was published in April 1997, require that the technical reliability of geological disposal in Japan be demonstrated in the Second Progress Report. The Guidelines also specified the major issues to be dealt with in the Report in order to provide a technical basis for the selection of potential disposal sites and for the formulation of safety standards, the two most critical issues faced for implementation of a geological disposal project. The AEC Guidelines also provided guidance on the approach for R&D to be performed by JNC in cooperation with other agencies and organizations,

and how to evaluate research results objectively and transparently in the Second Progress Report. Taking into account the provisions of the AEC Guidelines, JNC has tackled the problem of demonstrating, with a greater degree of confidence, the technical feasibility and reliability of the geological disposal concept within the Second Progress Report and providing key input for site selection and development of a regulatory framework.

[M E M O]

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[M E M O]

This image shows a full page of a document template designed for handwriting practice or general note-taking. It consists of approximately 28 evenly spaced horizontal dotted lines across the entire width of the page. The background is plain white, and there are no margins, headers, or footers present.

Short Biography of Chairmen, Speakers, and Panelists

Members of the Program Committee for the 32nd JAIF Annual Conference

Chairman:	Jun-ichi Nishizawa	President, Iwate Prefectural University
Members:	Masahiko Ichiriki	Executive Editor In Chief The Kahoku Shimpo
	Tadao Ishibashi	Attorney at Law Ishibashi Law Office
	Michio Kakuta	Chief Editorial Board of Trustee Information Center on Nuclear Issues
	Masaharu Kitamura	Professor Graduate School of Engineering Tohoku University
	Shunsuke Kondo	Professor, University of Tokyo
	Nobuya Minami	Executive Vice-President Tokyo Electric Power Co., Inc.
	Toshiki Miyamoto	Chairman Nuclear Energy Steering Committee Japan Electrical Manufacturers' Association
	Kiyoshi Sasamori	General Secretary Japanese Trade Union Confederation
	Takao Shiokoshi	Editor in Chief The To-onippo Press
	Zenjirou Suda	Mayor of Onagawa Town Miyagi Prefecture
	Yoshihiko Sumi	Director and Executive Vice-President Kansai Electric Power Co., Inc.

	Yoshietsu Suto	Executive Vice President Tohoku Electric Power Co., Inc.
	Tetsuo Takeuchi	President Japan Nuclear Fuel Limited
	Yuko Tanaka	Lecturer, Yamagata Women's Junior College
	Tsutomu Toichi	Director Institute of Energy Economics, Japan
	Yasumasa Togo	President Japan Nuclear Cycle Development Institute
	Hiroyuki Torii	Editorial Writer Nihon Keizai Shimbun, Inc.
Observers:	Tsutomu Imamura	Deputy Director General Atomic Energy Bureau Science and Technology Agency
	Yoshihiko Sasaki	Deputy Director General Agency of Natural Resources and Energy Ministry of International Trade and Industry

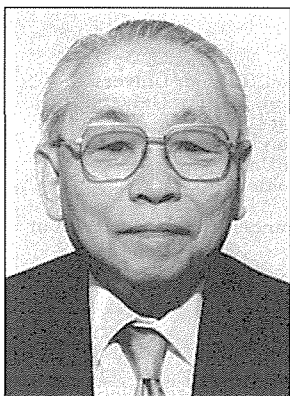
OPENING SESSION



Toshiaki Yashima

Date of birth: April 24, 1932

- 1955 Graduated from Faculty of Engineering, Tohoku University
- 1955 Joined Tohoku Electric Power Co.
- 1981 General Manager, Nuclear Power Plant Siting Dept.
- 1983 General Manager, Onagawa Nuclear Power Plant Siting Office
- 1983 Senior Officer & General Manager, Onagawa Nuclear Power Plant Siting Office
- 1985 Senior Officer & General Manager, Nuclear Power Dept.; Deputy General Manager, Plant Development Div.
- 1987 Director & General Manager, Nuclear Power Dept.; Deputy General Manager, Plant Development Div.
- 1991 Representative Managing Director & Deputy General Manager, Plant Siting Development Div.
- 1993 Representative Director & Executive Vice President; Acting General Manager, Plant Siting Development Div.
- 1993- Representative Director & President

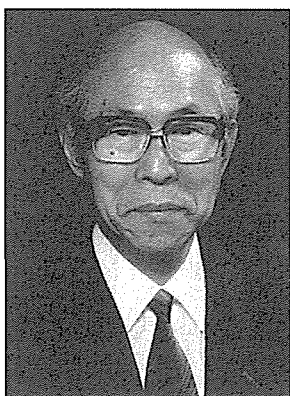


Takashi Mukaibo

Date of Birth : March 24, 1917

- 1939 B. S. in Engineering, the University of Tokyo
- 1947-54, 1958-59 Associate Professor of the University of Tokyo
- 1954 Ph. D. in electrochemistry. at the University of Tokyo
- 1954-58 Science Attaché, Embassy of Japan in USA
- 1959-77 Professor of the University of Tokyo
- 1968-69 Dean, the Faculty of Engineering, the University of Tokyo
- 1977-81 President, the University of Tokyo
- 1981-91 Acting Chairman, Japan Atomic Energy Commission
- 1992- Chairman, Japan Atomic Industrial Forum, Inc.
- 1983- President, Japan Association of Engineering Education
- 1985- President, Japan Society for Science Policy and Research Management
- 1989- President, Engineering Academy of Japan

Awards : Order of Gorkha Dakshin Bahu, First Class, His Majesty a Government of Nepal (1977) ; Commendatore Al Merito Bella Republic Italiana (1980) ; Ordem Nacional do Cruzeiro American Nuclear Society and American Atomic Industrial Forum (1984) ; Ordem de rio Branco (Grande Official), Brasil (1988) ; the First Class Order of the Sacred Treasure (1989), etc.



Akito Arima

Born on September 14, 1930

Education:

- 1953 B.S., The University of Tokyo, Faculty of Science, Department of Physics
- 1958 D.Sc., The University of Tokyo, Nuclear Physics

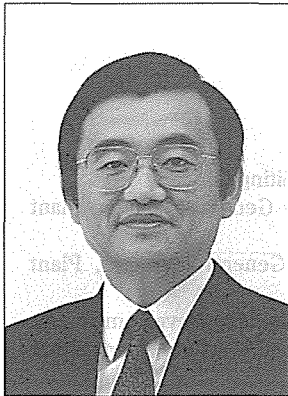
Major academic career:

- 1964 Associate Professor, Faculty of Science, The University of Tokyo
- 1971 Professor, State University of New York at Stony Brook
- 1975 Professor, Faculty of Science, The University of Tokyo
- 1983 University Senator, The University of Tokyo
- 1985 Dean, Faculty of Science, The University of Tokyo
- 1987 Vice President, The University of Tokyo
- 1989 President, The University of Tokyo
- 1993 Science Advisor to the Minister of Education Science, Sports and Culture
- 1993 Director-General, Institute of Physical and Chemical Research (RIKEN)
- 1995 President, Central Council for Education

Political career:

- Jul 1998 Elected to the House of Councilors, Liberal Democratic Party
- Jul 1998 Minister of Education, Science, Sports and Culture
- Jan 1999 Also appointed Minister of State for Science and Technology and Chairman of Atomic Energy Commission of Japan

Prizes: The Nishina Memorial Prize 1987, Honorable Doctor of Science. Glasgow University 1984, Order Das Grosse Verdienstkreuz, Germany 1990, Tom.W.Bonner Prize in Nuclear Physics 1993, Japan Academy Prize 1993, etc.



Shiro Asano

A native of Sendai, Miyagi Prefecture, Governor Asano was born in 1948. After graduating from the Faculty of Law of the University of Tokyo, he joined the Ministry of Health and Welfare in 1970. At the Ministry he has held the posts of Assistant Director in the Elderly Persons' Welfare Section at the Social Affairs Bureau and Assistant Director in the Pension Bureau's Planning Section. In between these posts he also served as First Secretary at the Japanese Embassy in U.S.A. In 1985 Mr. Asano was appointed Director of the Welfare Division of the Hokkaido Prefectural Government. It was at this post that he had his first encounter with work relating to the welfare of the physically and mentally disabled. In 1987 he returned to the Ministry of Health and Welfare as Director of the Welfare for the Physically and Mentally Disabled Division. While serving in these positions, Governor Asano was deeply influenced by the people he met and grew convinced that working for the welfare of the physically and mentally disabled would be his life's work.

In November 1993, after a final posting as Director of the Planning Division in the Life and Health Bureau, Mr. Asano left the Ministry after a career of 23 years to successfully run for the governorship of Miyagi Prefecture. He was reelected to office in October 1997.



Jun-ichi Nishizawa

Date of birth: September 12, 1926

1948	Graduated from the Faculty of Engineering, Tohoku University
1960	Doctor of Engineering, Tohoku University
1953-54	Research Assistant, Research Institute of Electrical Communication, Tohoku University
1954-62	Assistant Professor, Research Institute of Electrical Communication, Tohoku University
1962-90	Professor, Research Institute of Electrical Communication, Tohoku University
1968-	Director, Semiconductor Research Institute, Semiconductor Research Foundation
1989-	Director, Research Institute of Electrical Communication, Tohoku University
1990	Retirement from Tohoku University and Emeritus Professor, Tohoku University
1990-96	President, Tohoku University
1996-	Project Leader, Sendai Research Center, Telecommunications Advancement Organization of Japan
1997-	Honorary President, Miyagi University
1998-	President, Iwate Prefectural University

Award and Conferment:

Japan Academy Prize(1974), Person of Cultural Merits (Bunka-Korosha) conferred from Japanese Government(1983), Jack A. Morton Award from Institute of Electrical and Electronics Engineers (IEEE, U.S.A.)(1983), Honda Prize from Honda Foundation (International Prize)(1986), The International Organization of Crystal Growth (IOCG) Laudise Prize(1989), The Order of Cultural Merits (Bunka-Kunsho) conferred from Japanese Emperor(1989)

Academic Activity and Honorary Membership:

Foreign Member of the Russian Academy of Sciences(1988), Foreign Member of the Polish Academy of Sciences(1994), Member of the Japan Academy(1995), Honorary Foreign Member of the Korean Academy of Science and Technology(1996)



Tsutomu Kanai

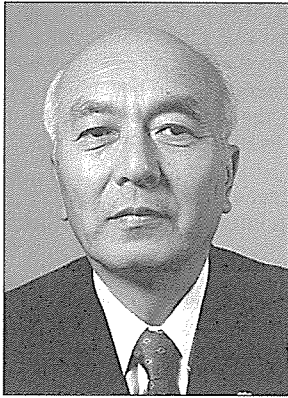
Dr. Tsutomu Kanai is President and Representative Director of Hitachi, Ltd. He was named to the current position in June 1991.

He joined Hitachi in 1958 and served in the Central Research Laboratory, developing nuclear reactors. From 1961 to 1962, he was engaged in research in nuclear physics at the Argonne National Laboratory in Illinois.

In 1985, Dr. Kanai was elected Executive Managing Director and Group Executive of the Power Group. He assumed the position of Senior Executive Managing Director in 1987 and the positions of Executive Vice President and Director in 1989. During his vice-presidency, he was responsible for the power and the industrial systems business. At that time, he also headed a corporate strategic committee for Hitachi's global operations.

He is a board member of various organizations outside of the company. He is currently serving as Vice Chairman of the Japan Federation of Economic Organizations. He chairs several industrial associations and institutions. He is also a member of the councils of MITI and Economic Planning Agency.

Dr. Kanai received his B.S., M.S. and Ph.D in mechanical engineering from the University of Tokyo. He is also qualified as a Registered Nuclear Chief Engineer in Japan and a Professional Engineer in Nuclear Engineering in U.S.A.



Hiroshi Araki

Date of Birth: April 18, 1931

Education:

1954 Graduated from the Faculty of Law, University of Tokyo

Professional Career:

1954 Joined Tokyo Electric Power Co, Inc. (TEPCO)
1970 Manager, Fuel Department, TEPCO
1979 General Manager, Corporate Affairs Department, TEPCO
1983 Director and General Manager, Corporate Affairs Department, TEPCO
1986 Managing Director, TEPCO
1991 Executive Vice President, TEPCO
1993- President, TEPCO

Other-Activities:

1994 Vice Chairman, Japan Association of Corporate Executives
1995- Chairman, The Federation of Electric Power Companies, Japan



Young-Sik Jang

Born on November 12, 1932

Education:

1969 Ph.D. in Economics, State University of New York, Albany, NY
1965 MPA, Nelson A. Rockefeller Graduate School of Public Affairs,
State University of New York, Albany
1964 B.S. in Management, Seton Hall University, South Orange, NJ
1955 Bachelor of Metal Engineering, Seoul National University, Korea

Major career in Korea:

1998 President & CEO, Korea Electric Power Corporation
1992 Chief of economic policy aides professors for President's Election
Preparation Team of the Democratic Party

1979-80 PCO-EDF Joint Research Group (Research on pricing policy, load management, resources planning and arrangement innovation)

1975-80 Member of Government Energy Policy Committee

1975-76 Adjunct professor of economics, Korea University Graduate School of Politics and Economics and Graduate School of National Defense)

1975-80 Senior Fellow, Korea Development Institute (Chief of Energy and Electricity Economics Research Team)

1960-61 Economic secretary to the Prime Minister (Mr. John M. Chang)

Major career in U.S.A.:

1995 Acting Director of Economics Department, SUNY at Plattsburgh

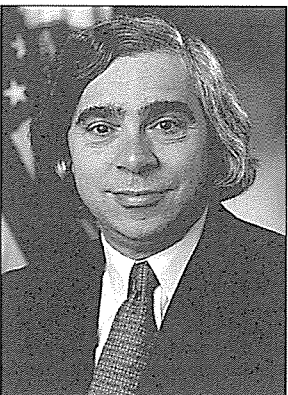
1988-95 Chairman, Department Evaluation Group of Management & Department Evaluation Group of Economics Department, SUNY at Plattsburgh

1988-93 Energy consultant to New York state government

1982-85 Treasurer and Executive Board member of United University

1988-92 Research Associate, Center for the Study of Joint Ventures of the SUNY-Moscow State University

1965-98 Research assistant and part-time lecturer /Assistant professor, Adjunct Professor(1971), full-time Professor (in 1981) of Economics/Adjunct Professor of Management/Professor of SUNY at Plattsburgh



Ernest Moniz

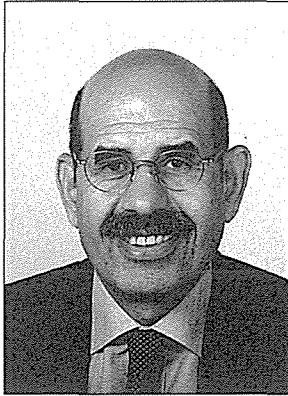
Dr. Ernest J. Moniz was confirmed by the U.S. Senate as Under Secretary of the Department of Energy on October 28, 1997. As the Under Secretary, Dr. Moniz advises the Secretary and oversees the Department's research and development portfolio, including energy and environmental technologies, national security, and fundamental science. He oversees the national laboratory system and national security programs, including stockpile stewardship and nonproliferation.

Before joining the DOE, Dr. Moniz was Professor of Physics and Head of the Department of Physics at MIT. Prior to that, he served as the Associate Director for Science in the Office of Science and Technology Policy in the Executive Office of the President. He was nominated to this position by President Clinton in June 1995 and provided advice regarding the physical, life, social and behavioral sciences, science education, and university government partnerships.

Dr. Moniz's principal research interests are in theoretical nuclear physics. Dr. Moniz is widely recognized for his work describing the interaction of pions with nuclei.

Dr. Moniz has served numerous universities, national laboratories, professional societies, and government agencies in advisory roles. For example, he served on the American Physical Society Study Panel for Nuclear Fuel Cycles and Waste Management, provided scientific program advice for several particle accelerator laboratories in both the United States and Europe, and served as Chairman of the Director's External Review committee for the Los Alamos National Laboratory Physics Division. From 1992 to 1995, Dr. Moniz served the Department of Energy and the National Science Foundation as Chairman of the Nuclear Science Advisory Committee.

Dr. Moniz received a Bachelor of Science degree in physics from Boston College in 1966 and a doctorate in theoretical physics from Stanford University in 1971.



Mohamed ElBaradei

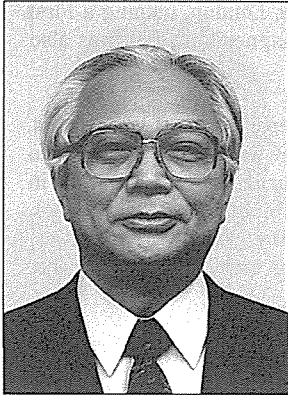
Dr. Mohamed ElBaradei was appointed Director General of International Atomic Energy Agency effective 1 December 1997. Dr. ElBaradei has been a senior member of the IAEA Secretariat since 1984, holding a number of high-level policy positions. From 1984-1987, he served as the representative of the Director General of the IAEA to the United Nations in New York. Thereafter, he became the Agency's Legal Adviser and Director of its Legal Division before heading the Division of External Relations, and becoming Assistant Director General for External Relations in 1993.

Dr. ElBaradei was born in Egypt in 1942. He gained his initial law degrees in the 1960s at the University of Cairo, and subsequently his Master's degree and Doctorate in International Law at the New York University School of Law between 1971 and 1974.

He began his diplomatic career in the Egyptian Ministry of Foreign Affairs in 1964, serving notably on two occasions in the Permanent Missions of Egypt to the United Nations in New York and Geneva.

During his thirty years of work as diplomat, international civil servant and scholar, Dr. ElBaradei has become closely familiar with the work, processes and legal framework of international organizations, notably in the UN system. His career with the IAEA has enabled him to develop wide expertise in varying fields of activity including technical co-operation, nuclear safety and verification, and political and legal issues. He belongs to a number of professional associations, including the International Law

SESSION 1



Shumpei Kumon

1957 B.A., Economics, University of Tokyo, Tokyo, Japan
 1959 M.A., Economics, University of Tokyo
 1968 Ph.D., Economics, Indiana University, Indiana, U.S.A.
 1965-88 Taught Social Science, University of Tokyo
 1988-90 Taught International Studies, University of Washington, Washington, U.S.A.
 1990- Professor, International University of Japan
 1993- Executive Director, Center for Global Communications

Specialization:

- Social Sciences (especially Social Systems Study)
- Japanese Society
- Information Civilization

Projects:

- Information Technology and Communications Policy Forum of Japan
- Global Information Infrastructure Conference (Global Industrial & Social Progress Research Institute)
- The Committee for the New Century of Information (Japan Productivity Center for Socio-Economic Development)
- The Committee for Japan's Strategy (Foundation for Advanced Information & Research, Japan)

Major publications:

"A Treatise on Social Systems" 1978, "The 'Ie' Society as a Civilization" 1979, "Japan as a Network Society" 1992, "A Treatise on Information-Based Civilization" 1994



Judith Kipper

Judith Kipper is an internationally recognized Middle East specialist and is a co-director for the Middle East Studies Program at the Center for Strategic and International Studies. She is associated with the Council on Foreign Relations where she directs the Middle East Forum, its only regional program. Kipper is a consultant on international affairs to the RAND Corporation and to ABC News. Prior to joining CSIS, she was a guest scholar at The Brookings Institution. She travels frequently to the Middle East visiting both Israel and Arab countries. She also meets regularly with officials and others in Russia and other countries of the former Soviet Union.

Kipper is the co-editor of *The Middle East Global Perspective* (Westview Press, 1991); and supervised *The West Bank Data Project: A Survey of Israel's Policies*, and *The Arab-Israeli Military Balance and the Art of Operations*. She contributes to publications such as *The New York Times*, *The Los Angeles Times*, and *The Washington Post* and comments on television and radio in the United States, Europe, Japan, China, and Middle East. She speaks frequently to university, business, economic, and banking groups on Middle Eastern and international affairs. She has briefed The Brookings Institution Board of Trustees, Council on Foreign Relations Corporate Program, Chase Manhattan Bank Board, Institutional Investor Council, Lockheed Corporation, Mobil Oil Corporation, Shell Oil Company, World Trade Institute and many other institutions in the United States and internationally.

Kipper has broad based experience in international relations. She worked in Paris at the French newsweekly *L'Express* for six years. She drove from Paris to India where she spent six months and then spent a year in Israel and Egypt before returning to the United States. She is on the board of *Middle East Watch*, a human rights organization; and *Initiative for Peace and Cooperation in the Middle East*.



Yoshihiko Sumi

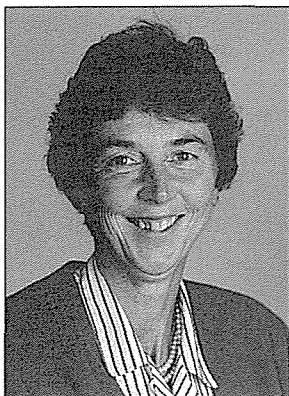
Date of Birth: November 15, 1930

Academic Career:

1953 Graduated from Electrical Engineering, Kyoto University

Professional Career:

1953 Joined the Kansai Electric Power Co., Inc.
 1971 Director of Kujo Sales office
 1972 Resident Engineer in Indonesia as a member of Newjtec Inc.
 1974 Assistant General Manager, System Engineering Department
 1977 General Manager, System Engineering Department
 1979 General Manager, Central Office of High Voltage Transmission Projects Construction
 1981 General Manager, Hokuriku District Office
 1983 General Manager, Fukui Nuclear Power District Office
 1985 Elected to the Member of the Board of Directors General Manager, Fukui Nuclear Power District Office
 1986 Board Director, Nuclear Operations
 1987 Board Director, Nuclear Operations and Nuclear Projects
 1988 Managing Director
 1991 Senior Managing Director
 1993- Director and Executive Vice-President
 1997- Chairman, Committee for Nuclear Power Development. Federation of Electric Power



Sue. Ion

Dr. Sue Ion studies for a degree in Materials Science at Imperial College, London, gaining a First Class Honours in 1976. Her Ph.D. in Dynamic Recrystallisation of a Magnesium Alloy was also gained at Imperial College, London.

She joined BNFL in 1979 and worked in the Company's Fuel Group R&D department for seven years. Dr. Ion led the team responsible for BNFL's new fuel plant development work before turning to commercial matters as the Oxide Fuel Business Manager in 1987. She returned to her R&D roots in 1990, first as Head of R&D for the Fuel business and in 1992 as Director of Technology Development, with responsibility for BNFL's substantial R&D covering the whole of the Company's activities, including reprocessing and waste management. This role was enhanced in 1996 when she became Director of Technology & Operations.

Dr. Ion was awarded the Hinton Medal by the Institution of Nuclear Engineers in 1993 for an outstanding contribution to nuclear engineering and Fellowship of the Royal Academy of Engineering in 1996. Since 1994, she has been a Member of Council for the Particle Physics and Astronomy Research Council in the United Kingdom.



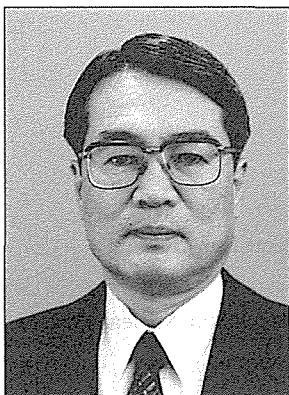
Bertrand Barré

Bertrand Barré has been, since 1994, at the head of the Nuclear Reactor Directorate of the French Atomic Energy Commission, CEA, a unit of about 2000 R&D professionals devoted to nuclear reactors of all kinds and their fuel.

Graduated in general engineering from Ecole des Mines de Nancy, and postgraduated in solid state physics, B. Barré joined the CEA in 1967 and has been working ever since, both in France and abroad, for the development of nuclear power.

Alternating scientific and managerial positions, Mr. Barré was notably Nuclear Attache near the French Embassy in Washington (U.S.A.) and Director of Engineering in TECHNICATOME, an industrial subsidiary of the CEA.

Bertrand Barré is presently Member of several Scientific & Technical Councils, in France and in the European Union, and the French Governor of the European Joint Research Center. He was Chairman of the French Nuclear Energy Society (SFEN), and serves presently as Vice-chairman of the European Nuclear Society (ENS).



Satoshi Morimoto

Date of birth: March 15, 1941

Satoshi Morimoto is Senior Researcher at the Nomura Research Institute. He has held several positions in the Japanese Ministry of Foreign Affairs, including Director of the Consular and Migration Policy Division (1991-1992), Director of the Security Policy Division in the Bureau of Information Analysis, Research and Planning (1987-1989), and Deputy Director of the Second South East Asia Division in the Bureau of Asian Affairs (1979-1980). He served as Counselor at the Japanese Embassy in Nigeria (1985-1989) and as First Secretary at the Japanese Embassy in the United States (1981-1985). He was a Senior Fellow at the Fletcher School of Law and Diplomacy at Tufts University (1980-1981) and Senior Guest Researcher at the Brookings Institution (1981-1982). Before he joined the Ministry of Foreign Affairs, he served the Japanese Self Defense Air Force (1965-1979). Mr. Morimoto graduated from Air Force Command and Staff College (1975) and National Defense Academy (1965).

Mr. Morimoto is also a Special Lecturer at Keio University and Guesting Professor at Chuo University.

SESSION 2



Soichiro Tahara

Born in 1934

After graduating from Waseda University, he joined Iwanami Movies Co. and then TV-Tokyo Broadcasting Co.

Mr. Tahara has been very energetic in extending critique of a broad range of issues such as politics, economy, industries, advanced technologies in mass media since he became a free-lance journalist in 1976.

He wrote many publications including "Nuclear Wars," "Japanese Bureaucracy," "Media Wars." His latest publication is "A Whale without Head — A Fact of a Political Drama."



Tadao Ishibashi

Born in April 1945 in Mutsu, Aomori

1968 Graduated from Faculty of Law, Chuo University

1972 Registered at the Daini Tokyo Bar Association as attorney at law

1982- Registered at the Aomori Bar Association

1985-92 Served as Chairman of Nuclear Energy Issues Committee, the Japan Federation of Bar Associations

1996-97 Member of Monju Accident Survey Committee

1996- Member of the Informal Meeting for the High-level Radioactive Waste, Atomic Energy Commission of Japan



Hiroyuki Torii

Date of Birth: July 17, 1942

Education:

1967 Graduated from the University of Tokyo

1969 Master of Engineering, the University of Tokyo

Career:

1969 Joined Nihon Keizai Shimbun

1969-76 Scientific News Correspondent

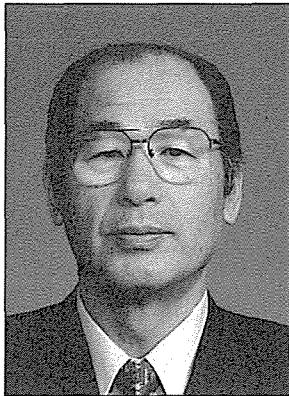
1976-82 Industrial News Correspondent

1982-84 Scientific News Correspondent

1984-87 Senior Fellow, Nikkei Industrial Research Institute

Editor-in-Chief of Nikkei High Tech Report

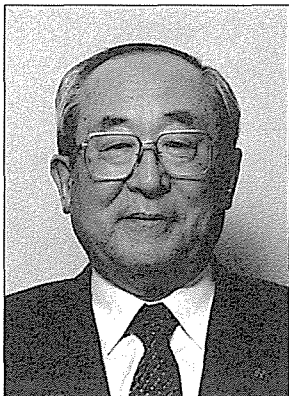
1987- Editorial Writer



Born on October 14, 1943

- 1972 Graduated from Matsuyama Technical High School
Joined Electric Power Development Corporation
- 1973 Executive board member of the Federation of Electric Power Companies' Labor Unions
- 1977 Deputy Secretary General, Trade Unions' Council for Policy Promotion
- 1984 Chairman of Executive Board, EPDC Labors' Union
- 1990 Managing Director, JTUC Research Institute
- 1995 Department Director, Department of Economic and Social Policy, the Japanese Trade Union Confederation

Tadayuki Murakami



Date of birth: November 4, 1939

- 1954 Graduated from Department of Economics, Yokohama National University
- 1954 Joined Tokyo Electric Power Co., Inc. (TEPCO)
- 1979 General Manager of General Planning Department, TEPCO
- 1981 Director, General Planning Department, TEPCO
- 1985 Managing Director, TEPCO
- 1989 Executive Vice President, TEPCO (-1991)
- 1991- President of Central Research Institute of Electric Power Industry (CRIEPI)
- 1995- Commissioner, Atomic Energy Commission of Japan

Susumu Yoda

LUNCHEON



Sanzo Hosaka

Born on May 15, 1939

- 1962 Graduated from St. Paul's University, Degree in Law
Joined Tokyo Nissan Auto Sales Co., Ltd.
- 1971 First elected to Taito Ward Assembly, Tokyo
- 1973 First elected to Tokyo Metropolitan Assembly (re-elected 5 times)
- 1987 Director, Taito Ward District Branch, Liberal Democratic Party (LDP)
- 1995 First elected to the House of Councillors (H.C.)
Member of Standing Committee on Rules and Administration, H.C.; Member of Standing Committee on Communications, H.C.; Member of Special Committee on Relocations of the National Diet and Related Organizations, H.C.
- 1996 Chairman, Tokyo Automobile Chamber of Commerce
- 1997 Deputy Chairman, Diet Affairs Committee, LDP in H.C.
- 1998 Member of Standing Committee on Transport, Information and Telecommunications, H.C.
- 1998 State Secretary for International Trade and Industry



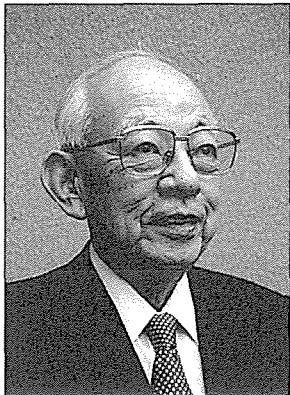
Tetsuro Morimoto

Born in 1925 in Tokyo

Mr. Morimoto graduated from Dept. of Philosophy, Faculty of Letters, University of Tokyo and graduated from Dept. of Sociology, Graduate School of the University. In 1953 he joined the Asahi Newspaper. Since 1976 when he left the newspaper, he has been well-known for his critique of social and cultural issues. He also served as Professor in letters at Tokyo Women's University from 1988 through 1992.

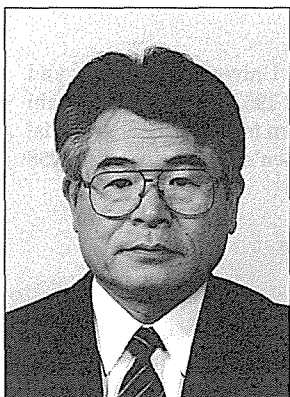
Mr. Morimoto is a author of a number of books dealing with cultural affairs.

SESSION 3



Akira Oyama

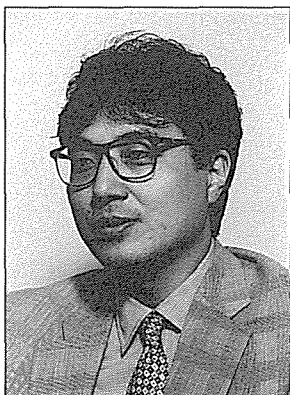
- 1946 Graduated from the University of Tokyo
- 1951-61 Associate Professor of Electrical Engineering, the Univ. of Tokyo
- 1955 International School of Nuclear Science and Engineering, Argonne National Laboratory
- 1960 Eisenhower Exchange Fellow
- 1961-69 Professor of Nuclear Engineering, the Univ. of Tokyo
- 1969-81 Executive Director of Power Reactor and Nuclear Fuel Development Corporation (PNC)
- 1981-88 Commissioner, Nuclear Safety Commission
- 1985-88 Member of the Scientific Advisory Committee of IAEA
- 1987- Professor Emeritus, the Univ. of Tokyo
- 1988-91 Commissioner, the Atomic Energy Commission of Japan
- 1991-95 Vice Chairman, the Atomic Energy Commission of Japan
- 1996- President, Japan Atomic Energy Relations Organization



Isamu Sasaya

Born on September 14, 1942

- 1965 Graduated from Muroran College of Technology
Joined Science and Technology Agency (STA)
- 1981 Director, Office of Emergency Planning and Environmental Radioactivity, Nuclear Safety Division, STA
- 1983 Director, Research Division, Planning Bureau, STA
- 1985 Director, Material Standards Division, Standards Department, Agency of Industrial Science and Technology
- 1987 General Manager, General Affairs Dept., Japan Marine Science and Technology Center
- 1989 Director, Policy Division, Atomic Energy Bureau, STA
- 1990 Director, Policy Planning Division, Power Reactor and Nuclear Fuel Development Corp.
- 1992 Deputy Director General, Science and Technology Policy Bureau, STA
Deputy Director General, Science and Technology Promotion Bureau, STA
- 1993 Director General, Nuclear Safety Bureau, STA
- 1995 Deputy Minister, STA
- 1997 Retired from STA and became Executive Director of PNC
- 1998 Executive Director, Japan Nuclear Cycle Development Institute (JNC)



Tetsunari Iida

Date of Birth: January 8, 1959

Education:

- 1981 Faculty of Engineering, Kyoto University (Nuclear Engineering)
- 1983 Graduate School of Engineering, Kyoto University (Nuclear Engineering)
- 1998 Doctor Course at Research Center for Advanced Science & Technology, University of Tokyo.
Research on sustainable community/society.

Career:

- 1983-92 Kobe Steel Ltd., Nuclear Energy Department
- 1987-89 Central Research Institute of Electric Power Industry
- 1992- Japan Research Institute Ltd., Dept. of Environmental & Social Policy Studies
- 1996- The University of Lund, Environmental & Energy System Studies as a visiting research associate

Since 1993, Mr. Iida has been working as voluntary staff of "Peoples' Forum 2001, Energy Research Group," which is one of energy related NGOs in Japan, trying to propose alternative policies to the government. He holds a membership at Japan Society of Environmental Economy & Policy, Japan Society of Public Utilities, Japan Society of Energy & Resources, Atomic Energy Society of Japan, etc. His publications and articles include: "Energy Democracy in Nordic Countries" "Toward Dialogue-Necessity of Nuclear Moratorium" "Historical review of Japan's energy policy and perspective for sustainable future" "Study on local society development around high-level waste disposal", etc.



Kiyotake Inaba

Born in September 1936 in Tokyo

- 1959 Graduated from Department of Geology, Faculty of Science, University of Tokyo
- 1962 Graduated from Graduate School, University of Tokyo
Joined the Administrative Management Agency of the national government
- 1989 Deputy Director General for Information System, Administrative Management Bureau at the Agency
- 1991 Deputy Director General for Administrative Management
- 1991 Director General for Pension Program of Public Officials
- 1994-96 Advisor to the government of Poland for the administrative reform
- 1996- Professor of Gunma University

Mr. Inaba's main duties at the Agency were the administrative management and inspection, the administrative reform, and the administrative information system. He is now a member at the Tokyo Metropolitan Government Committee for Information Disclosure.



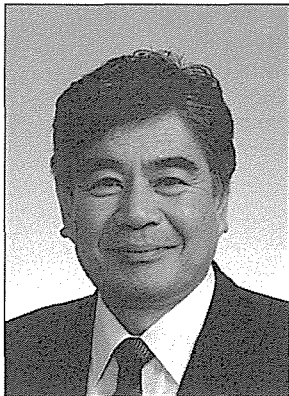
Michio Kakuta

- 1953 Graduated in Geophysics, Tohoku University
- 1957-88 Researcher in Environmental Safety, Japan Atomic Energy Research Institute
- 1988- Board of Trustees, The Nuclear Information Center
- 1994- Lecturer (Space Science), Saitama University



Takao Shiokoshi

Mr. Shikoshi was born on April 21, 1945. In 1968 he graduated from College of Economics, Nihon University and joined the To-o Nippo Press based in Aomori Prefecture, Japan. He then held various posts at the press and has been Editor-in-Chief since March 1998.



Zenjiro Suda

Mr. Suda was born on June 21, 1936 in Onagawa town where nuclear power plants are located. In 1955 he graduated from Ishinomaki High School near Onagawa town. In 1975 he was elected Member of Onagawa Town Assembly for the first time and he is currently in his fourth term of office. He has been Director at the federation of local autonomies where nuclear power plants are situated in Japan.

1990, he was awarded by Japanese Prime Minister for his cooperative efforts for nuclear power development.



Hideo Yakabe

Date of Birth : September 18, 1940

1938 Graduated from Waseda University (Law Course)

Joined Tokyo Electric Power Co.(TEPCO)

1983 General Manager, Togane Sales Office (Chiba Branch office), TEPCO

1987 Deputy General Manager, Marketing & Customer Relations Dept., TEPCO

1990 General Manager, Office of Customer Consultations., TEPCO

1993 General Manager, Office of Energy Efficiency, TEPCO

1995 General Manager, Plant Siting & Public Relations Dept., Japan Nuclear Fuel Limited (JNFL)

1996 Director & General Manager, Plant Siting & Public Relations Dept., JNFL

PUBLIC TALKS



Kazuko Tamura

Date of birth : February 26, 1940

Place of birth : Tokyo

Education :

1962 Graduated from Ochanomizu Women's University (Bachelor of Education)

Career:

1962 Joined the Kyodo News Agency

Staff writer of City, Cultural and Science News

1989 Chief Editor, Science News Section and Editorial Writer (science, environment, life science)

1992 Senior Writer and Editorial Writer

1997 Deputy Chief Senior Writer and Editorial Writer

Other posts :

1993 Member, Council for Consulting Engineer

1997 Member, Panel on Promotion of Local Science and Technology



Yuko Tanaka

Born in 1939 in Tokyo

1962 Graduated from Tokyo Women's University and joined NHK as an announcer

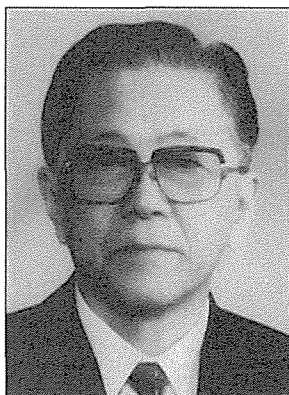
1974 Became a free-lance announcer

1978 Moved to Yamagata and worked as newscaster at Yamagata TV

1990 Became a lecturer at Yamagata Women's Junior College

Ms. Tanaka serves as a member at several committees such as Council for Youth of Yamagata Prefecture, Committee for Compilation of Yamagata Prefectural History, Yamagata City Committee for International Exchange Promotion, Forum "Energy Think Together," etc.

She co-authored English books titled "Yamagata the Other Side of the Mountain" and "A Guide to Beautiful Yamagata." She also produced an English video for introduction of Yamagata "Ancient Rituals of Yamagata."



Kazuhisa Mori

Born on January 17, 1926 in Hiroshima Prefecture

Education: Graduated from the Kyoto Univ. Faculty of Science, Dept. of Physics in 1948

Occupational Record:

1948-56 Publisher Chuokoron-sha Co., Ltd.

1956-65 The Electric Power Development Co., Ltd.

1956- Japan Atomic Industrial Forum, Inc.

1963-65 Manager Programming Division, Tokyo Channel 12 TV Ltd.

1965- Director, Nuclear Safety Research Association

1978-96 Executive Managing Director, JAIF

1996-98 Vice Chairman, JAIF

1999- Executive Vice Chairman, JAIF

Other Positions:

1975- Director, Marine Ecology Research Institute

1975- Director, Nuclear Materials Control Center

1976- Vice President, Japan Atomic Energy Relations Organization

1984- Counselor, Power Reactor and Nuclear Fuel Development Corporation

1994- Councilor, University Alumni Association

Official Positions:

Special Member, Advisory Committee for Energy, Ministry of International Trade and Industry;

Special Committee Member, Atomic Energy Commission; Special Committee Member, Nuclear Safety Commission, etc.

SESSION 4



Shunsuke Kondo

Date of Birth: July 26, 1942

1961-65 Faculty of Engineering, University of Tokyo (BE in Nuclear Engineering)

1965-67 Faculty of Engineering, University of Tokyo (ME in Nuclear Engineering)

1967-70 Faculty of Engineering, University of Tokyo (PhD in Nuclear Engineering for a thesis entitled "Analysis and Evaluation of Hypothetical Core Disruptive Accident Phenomena of Liquid Metal-Cooled Fast Breeder Reactors")

1970-71 Lecturer, Department of Nuclear Engineering, University of Tokyo

1971-84 Associate Professor, Department of Nuclear Engineering, University of Tokyo

1984-88 Professor, Nuclear Engineering Research Laboratory, University of Tokyo

1988- Professor, Department of Nuclear Engineering, University of Tokyo

Research interest:

Systems Analysis and Optimization of Nuclear Reactor Design, Safety Design and Management of Nuclear facility, Human Reliability and Human Interface Design, Nuclear Energy Policy and Science and Technology Policy

Membership of academic societies:

Atomic Energy Society of Japan, American Nuclear Society, Japan Institute of Electrical and Electronic Engineers, Society for Risk Analysis, Japan Section, Society for Energy and Resources

Other professional activities:

Nuclear Power Safety Advisor, MITI; Nuclear Safety Advisor, STA; Members, Subcommittee on FBR Development and Subcommittee on Long-Term Program, AEC; Members, Subcommittee on Nuclear Reactor Safety Criteria and Subcommittee on Safety Research, Nuclear Safety Commission; Member, Subcommittee on Nuclear Energy, Energy Council, MITI (1996-chairman); Member, Subcommittee on Nuclear Science, Science Council, Ministry of Education; Member, International Nuclear Energy Academy

Books:

Nuclear Safety, 1990; Nuclear Power at the Crossroads: challenges and Prospects for the 21st Century, 1994 (Chapter 2 Japanese Policy on Nuclear Power Development and Utilization)



Yasumasa Togo

Date of Birth: February 17, 1928

Education:

1951 Bachelor of Electric Engineering, University of Tokyo

1956 Completed graduate course of Engineering, University of Tokyo

1964 Doctor of Engineering, University of Tokyo

Career:

1956 Japan Atomic Energy Research Institute (JAERI)

1962 Assistant Professor, Engineering Division, University of Tokyo

1968 Professor, Engineering Division, University of Tokyo

1988 Professor Emeritus, Engineering Division, University of Tokyo

1988 Member of Nuclear Safety Commission

1993 Chairman of Nuclear Safety Commission

1998 President, Power Reactor and Nuclear Fuel Development Corporation

1998 President, Japan Nuclear Cycle Development Institute



Saburo Kikuchi

Date of birth: May 9, 1941

Place of birth: Iwate, Japan

Career

1965 Graduated from Department of Nuclear Engineering, Faculty of Engineering, University of Kyoto

1965 Joined the Atomic Fuel Corporation (AFC)

1967 AFC was reorganized into Power Reactor and Nuclear Fuel Development Corporation (PNC)

1988 Deputy Director, Policy Planning Division

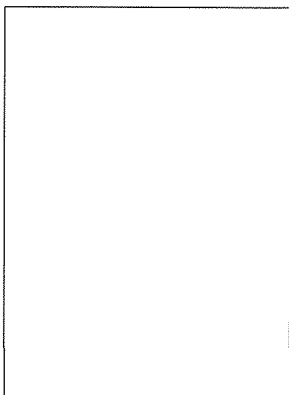
1989 Secretary to the President

1992 Director, Policy Planning Division

1995 Director, Monju Construction Office

1997 Executive Director

1998 Executive Director, Japan Nuclear cycle Development Institute (JNC)



Jean-Louis Ricaud

Mr. Ricaud was born in 1952, he graduated from from Ecole Normale Supérieure, and studied at Ecole des Mines.

- 1978 Joined COGEMA and worked as member of the top management at the headquarters in Paris
- 1983 Became Director of La Hague reprocessing services (UP2), and was deeply involved in the construction of UP3 Plant
- 1988 Vice President of SGN
- 1992- Vice President of COGEMA

He is currently Senior Vice President of COGEMA.



Hiroko Sumita

Education: L.L.B., University of Tokyo

Professional Appointments and Experience:

1979-85&

- 1992-93 Public Prosecutor of Tokyo District Public Prosecutors' Office and other offices
- 1986-90 Attorney attached to the Civil Affairs Bureau of the Ministry of Justice
- 1990-91 Ministerial aide to the two Ministers of Justice consecutively, the Honorable Seiroku Kajiyama and the Honorable Megumu Sato

1994 Professor of the Legal Research and Training Institute of the Supreme Court of Japan

1995 Registered at the National Bar Association of Japan as an Attorney at Law

Current Profession and Appointments:

- Attorney at Law, Sumita Law Office
- Legal Counselor of the Housing Loan Administration Corporation
- Special Member of the Council for Gender Equality
- A Member of the National Defense Facilities Council
- Special Member of the Atomic Energy Council



Katsuya Tomono

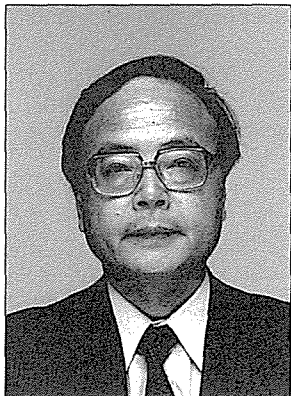
Date of Birth: August 25, 1935

Education:

1959 Graduated from the Mechanical Engineering Division, Engineering Department, the University of Tokyo

Occupation:

- 1959 Entered the Tokyo Electric Power Co. (TEPCO)
- 1977 Manager, Nuclear Power Plant Construction Section, Nuclear Power Plant Construction Department, TEPCO
- 1987 Manager, Nuclear Power Plant Design Section, Nuclear Power Plant Construction Department, TEPCO
- 1980 Deputy General Manager, Nuclear Power Plant Construction Department, TEPCO
- 1983 Deputy Superintendent, Niigata Nuclear Power Plant Construction Office, TEPCO
- 1985 Deputy Superintendent, Kashiwazaki-Kariwa Nuclear Power Plant Construction Office, TEPCO
- 1987 General Manager (construction), Nuclear Power Plant Construction Department, TEPCO
- 1988 General Manager, Nuclear Power Plant Construction Department, TEPCO
- 1993 Director, Deputy Executive General Manager, Nuclear Power Division, TEPCO
- 1995 Managing Director, Executive General Manager, Nuclear Power Division, TEPCO
- 1997 Executive Vice-President, Executive General Manager, Nuclear Power Division, TEPCO

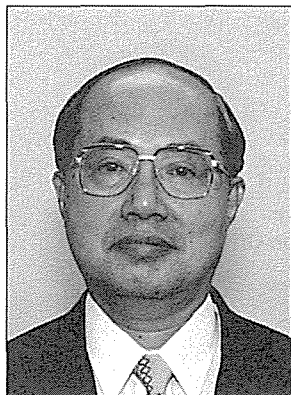


Born in 1944 in Sendai City.

Mr. Yokoyama studied at Faculty of Science, the University of Tokyo. In 1969, after graduating from Graduate School of the University, he joined the Mainichi Newspapers. In 1984 he was assigned to Science Division where he became an editorial writer. In April 1995, he took the post of Division Head/Editorial Writer. He has been Editorial Writer since April last year.

Hiromichi Yokoyama

SESSION 5



Akio Morishima

Date of Birth: November 14, 1934

Chair of the Board of Directors/President, Institute for Global Environmental Strategies (IGES)

Education:

1958 Graduated from School of Law, University of Tokyo, L.L.B.

1968 Graduated from Harvard Law School, L.L.M.

Major Professional Career:

1996 Professor, Sophia University, Japan

1994 Professor Emeritus, Nagoya University, Japan

1994-96 Dean, Graduate School of International Development, Nagoya University, Japan

1998-90 Dean, Faculty of Law, Nagoya University, Japan

1976-77 Visiting Professor, Harvard Law School, U.S.A.

1971-96 Professor, Faculty of Law, Nagoya University, Japan

1961-71 Associate Professor, Faculty of Law, Nagoya University, Japan

Current Involvements:

-Member, Council of Law and Institution, Ministry of Justice

-Chairman, Policy and Planning Commission, Central Council of Environment, Environment Agency of Japan

-Member, Central Council of Social Health Insurance, Ministry of Welfare

-Chairman, Consumer Economy Commission, Council of Industrial Structure, Ministry of International Trade and Industry

-President, Association of Environmental Law and Policy

-President, Japan Association of Environmental Sciences

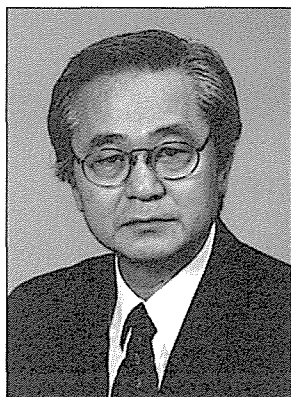
-President, Japan Center for International and Comparative Environmental Law

Awards:

Global 500 Award (UNEP), 1996, Environmental Protection Award (Environment Agency), 1995

Publications:

Product Liability Data Files, Daiichi-Hoki, 1995, Lectures on Torts Law, Yuhikaku, 1987, and many books and articles on the Environmental law.



Yoshihiko Sasaki

Born on September 8, 1944

1970 Graduated from Kyoto University, Master in Engineering

1970 Joined Ministry of International Trade and Industry

1984 Director, Technology Research and Information Division, Agency of Industrial Science and Technology (AIST)

1986 Chief Representative, Sydney Office, New Energy and Industrial Technology Development

1990 Director, Nuclear Power Division, Agency of Natural Resources and Energy (ANRE)

1992 Director, Technology Promotion Division, AIST

1993 Director, Electric Power Facility Division, ANRE

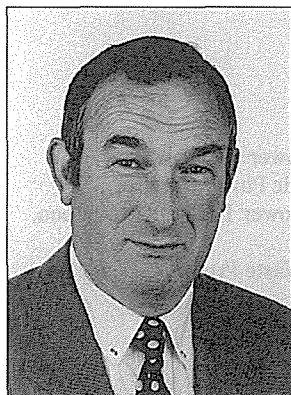
1994 Director, Regional Bureau Administration Division, MITI

1995 Deputy Director General for Technology Affairs (Research Affairs), AIST

1996 Deputy Director General, Environment Agency

1997 Director General, Tohoku Bureau of International Trade and Industry, MITI

1998 Deputy Director General, ANRE



Antoine Allemeersch

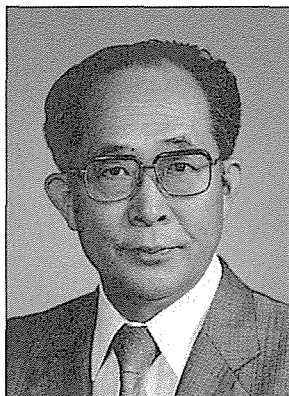
Born on October 31, 1946 at Cirfontaines en Ornois, France

1977-83 Member of Town Council of Cirfontaines en Ornois

1983- First Deputy Mayor of Cirfontaines en Ornois

1994- Member of Communal Council of Poissons

1998- Vice-President of Regional Council of Haute-Marne (in charge of environmental issues)



Teruyuki Aoki

Date of Birth: April 26, 1937

Education:

1959 Graduated from the Faculty of Engineering, Nagoya University

Occupational experience:

1959 Joined Chubu Electric Power Co., Inc.

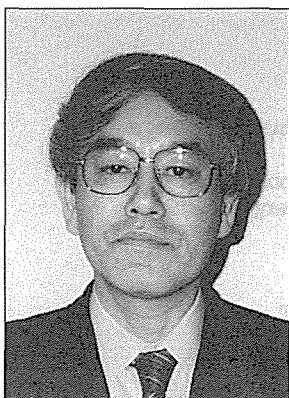
1987 General Manager, Hamaoka Nuclear Power Plant Construction Office

1988 Senior General Manager, Hamaoka Nuclear Power Plant Construction Office

1993 Director & General Manager of Nuclear Power Operations Dept.

1995 Director & General Manager of Hamaoka Central Administration Office

1997 Managing Director



Keiji Kojima

Born on November 6, 1937 in Tokyo

1963 Master of Science, University of Tokyo

1963-70 Public Works Research Inst., Ministry of Construction

1970-73 Lecturer, Dept. of Mineral Development Eng., Univ. of Tokyo

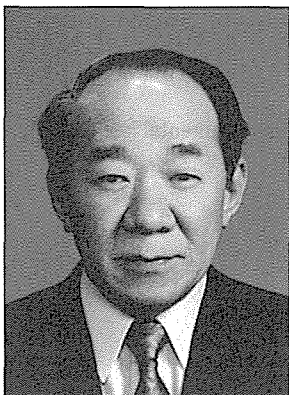
1973-84 Associate Professor, Dept. of Mineral Development Eng., Univ. of Tokyo

1984-95 Professor, Dept. of Mineral Development Eng., Univ. of Tokyo

1995-98 Professor, Dept. of Geosystem Engineering, University of Tokyo

1998- President of Geospace Labo.

1997- Member of the Science Council of JAPAN



Michio Suzuki

Born on April 16, 1936

Graduated from Kyoto University in 1961. Majored in Law.

Career:

1961 Joined Tokyo Electric Power Company

1987 General Manager, Nuclear Power Dept., the Federation of Electric Power Companies.

1991 General Manager, Nuclear Power Administration Dept., Tokyo Electric Power Company

1995 Associate Director, Deputy Executive General Manager, Nuclear Power Program Operation, Tokyo Electric Power Company

1996 Managing Director, Steering Committee on High-Level-Radioactive-Waste Project (SHP)



Mamoru Takeda

Born in January 1937 in Tokyo. In 1960 after graduating from Dept. of Mining, School of Science, Waseda University, Mr. Takeda joined Dowa Mining Co. In 1973 he joined Dowa Engineering Co., a Dowa Mining Co. affiliate company. The company's business includes architecture, civil engineering, underground development, plant engineering, etc. Mr. Takeda has been Managing Director at the company since June 1998.

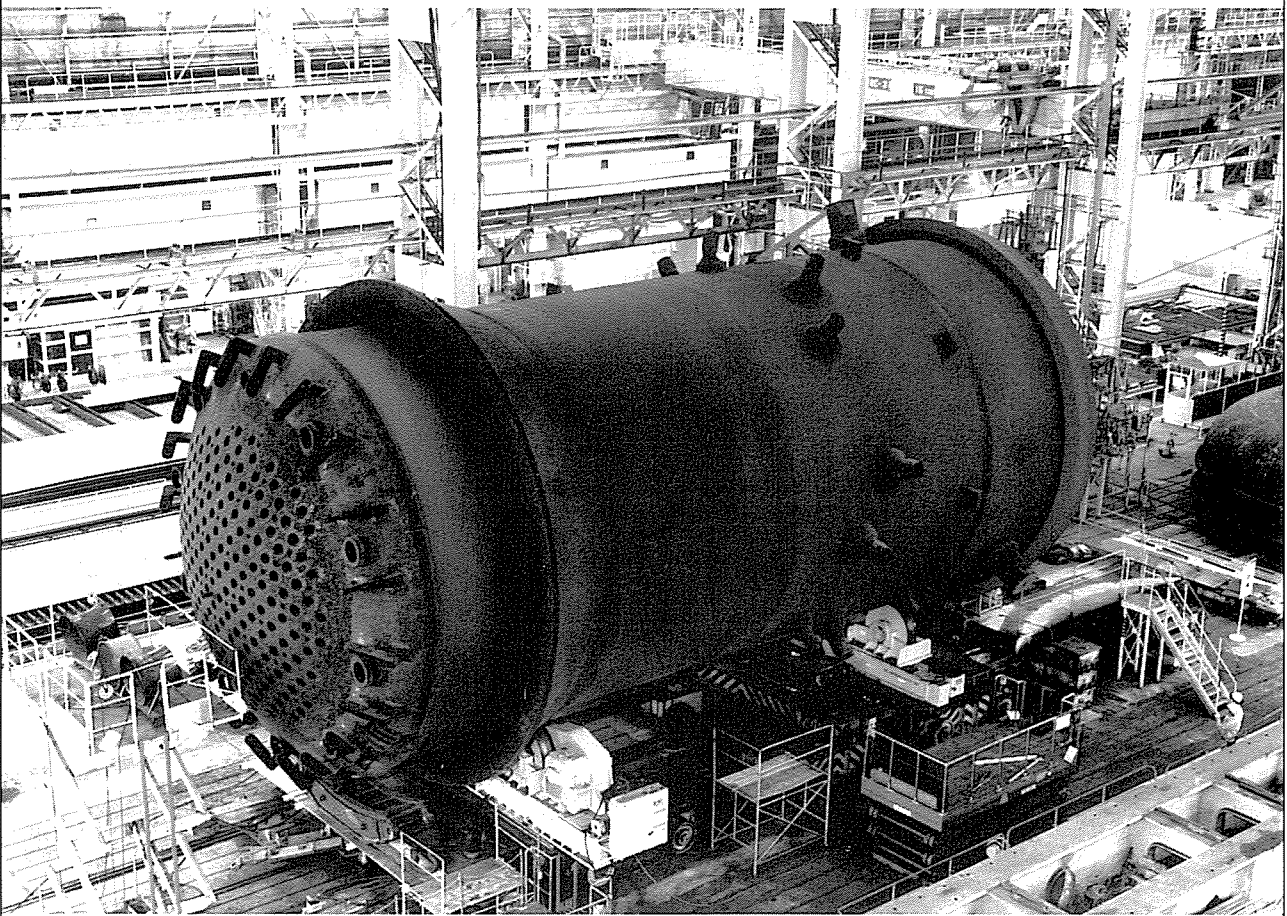


Sumio Masuda

Date of Birth: December 29, 1944

1969 Graduated from Faculty of Engineering, Seikei University with M.Eng. in industrial chemistry
Joined Power Reactor and Nuclear Fuel Development Corporation(PNC)
1992-96 Director, Waste Technology Development Division, Tokai Works, PNC
1996-98 Director, Radioactive Waste Management Project, PNC
1998- Director, Geological Isolation Research Project, Japan Nuclear Cycle Development Institute(former PNC)

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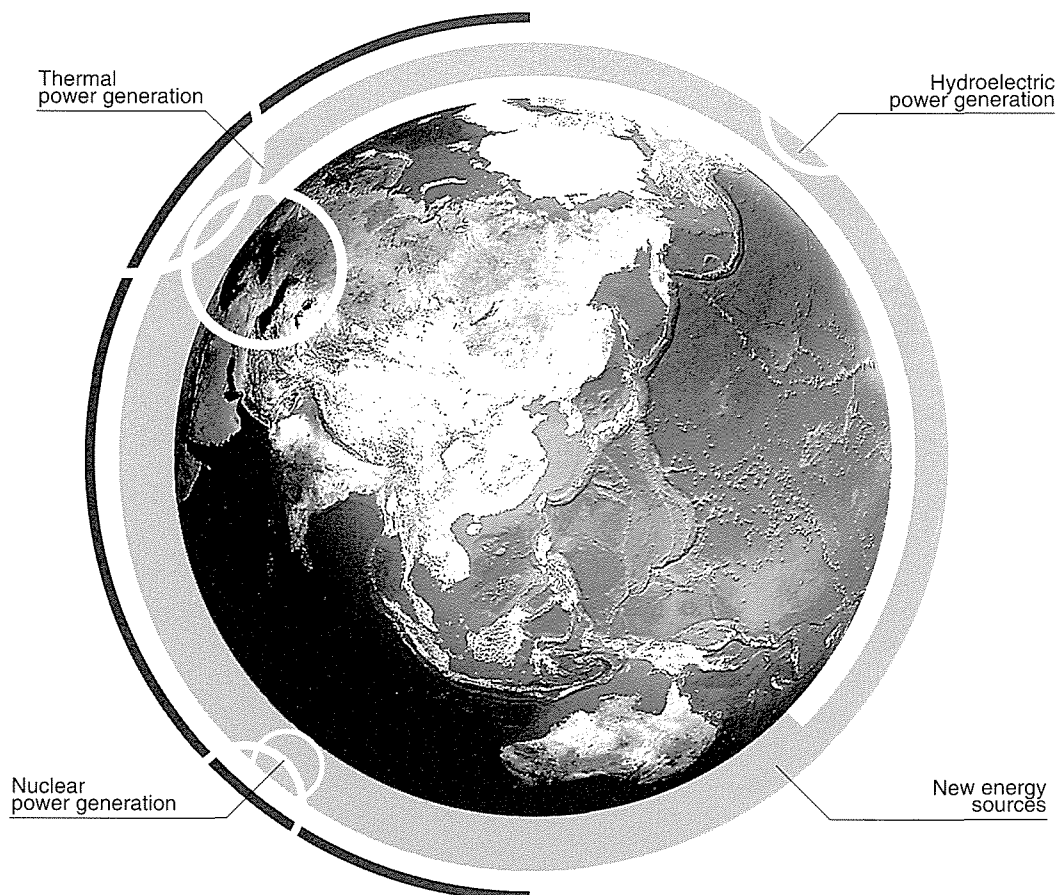
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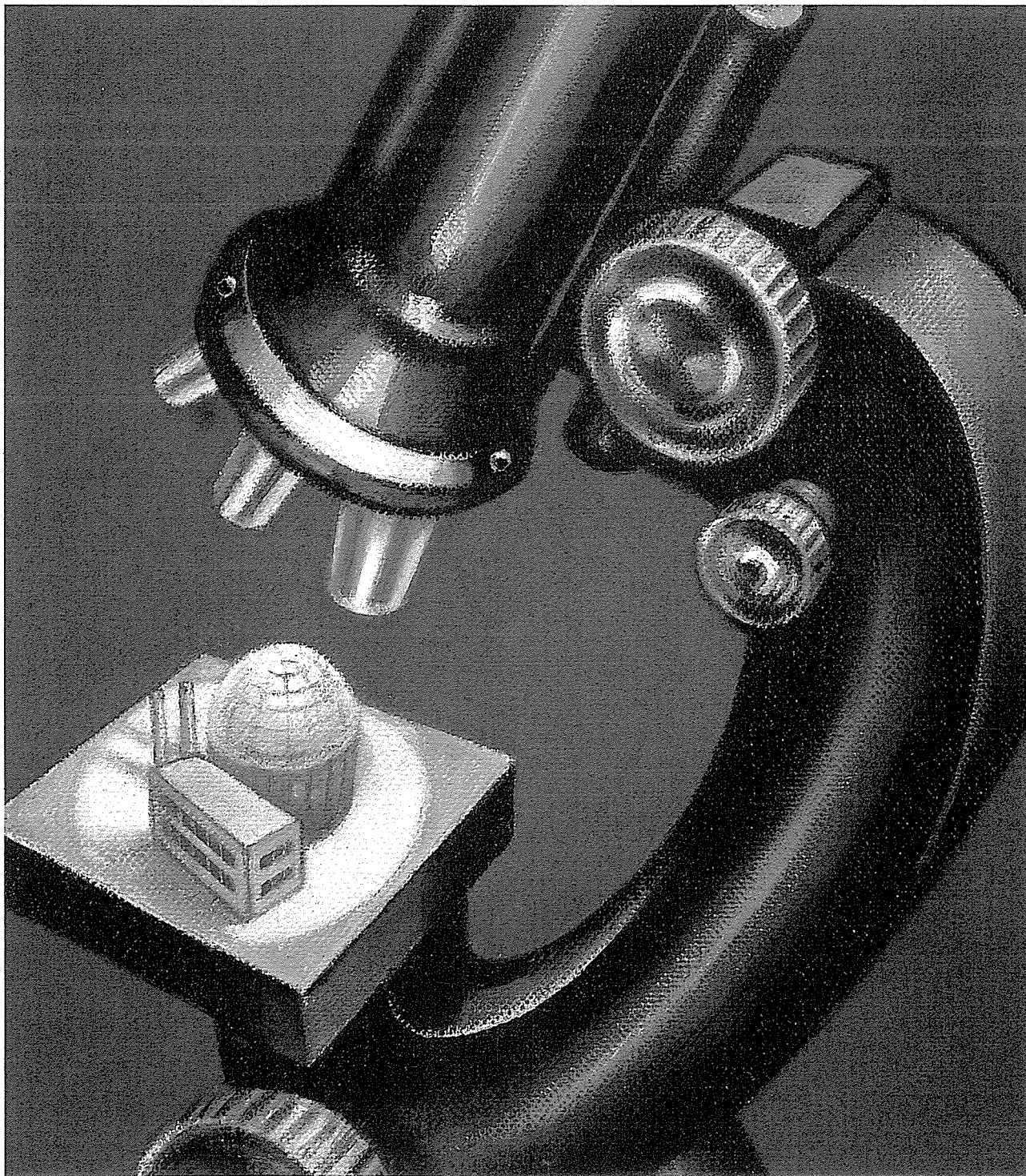
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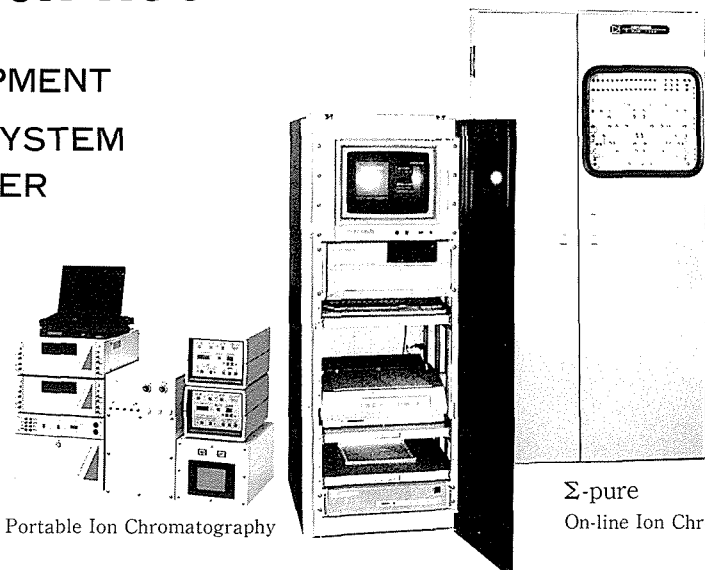
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Department of Planning & Information Services

1-13, Shimbashi 1-chome, Minato-ku, Tokyo, Japan

Tel 81-3-3508-7927

Fax 81-3-3508-2094

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