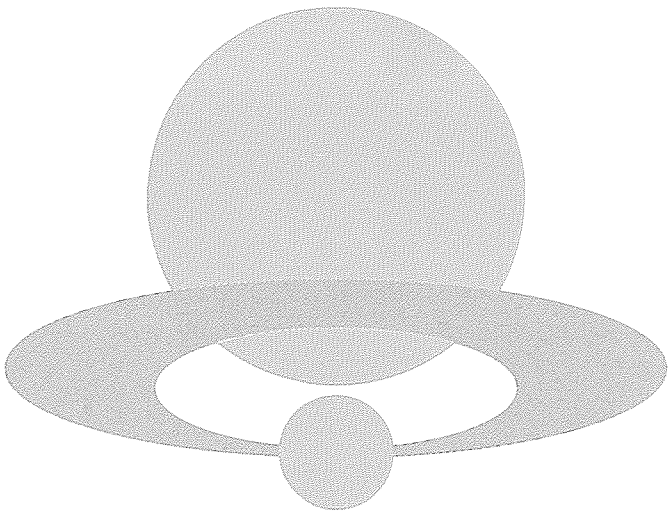
The 37th JAIF ANNUAL CONFERENCE

ABSTRACTS



April 21～23, 2004
Bunkyo Civic Hall, Tokyo

JAPAN ATOMIC INDUSTRIAL FORUM

第37回原産年次大会 予稿集 変更点一覧
List of changes in the 37th JAIF Annual Conference Abstracts

項目(item)	変更前 (before change)	変更後 (after change)
開会セッション	経済産業大臣所感 中川昭一　経済産業大臣	経済産業副大臣所感 泉　信也　経済産業副大臣
	科学技術政策担当大臣所感 茂木 敏充　科学技術政策担当大臣	内閣府大臣政務官所感 宮腰 光寛　内閣府大臣政務官(原子力担当)
Opening Session	Shoichi Nakagawa, Minister of Economy, Trade and Industry, Japan	Shinya Izumi, Senior Vice Minister of Economy, Trade and Industry, Japan
	Toshimitsu Motegi, Minister of State for Science and Technology, Japan	Mitsuhiro Miyakoshi, Parliamentary Secretary, Cabinet Office, Japan

開会セッション

泉　信也　氏　　略　歴

1937年８月１日生まれ

学歴：
1962年　九州大学工学部土木学科卒業

経歴：
1962年４月　運輸省入省
1991年３月　運輸省大臣官房審議官
1992年７月　参議院議員初当選
1995年８月　参議院予算委員会理事
1997年６月　参議院運輸委員長
1998年７月　参議院議員再選
2000年７月　運輸総括政務次官
2000年12月　北海道開発総括政務次官（兼任）
2001年１月　国土交通副大臣
2001年５月　国土交通副大臣（再任）
2002年１月　参議院保守新党幹事長
　　参議院保守新党国会対策委員長
　　保守新党国土・交通部会長
2003年９月　経済産業副大臣就任

Shinya Izumi

Date of Birth: August 1, 1937

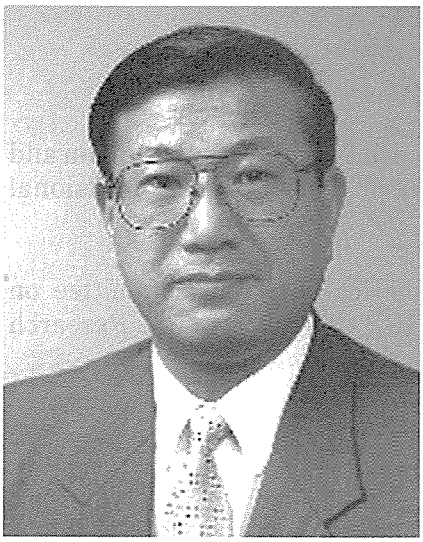
Education:
1962　Graduated from Kyushu University, Faculty of Engineering

Professional Career:
1962　Entered Ministry of Transport
1991　Deputy-Director of Minister's Secretariat, Ministry of Transport
1992　First elected to the House of Councillors (HC)
1995　Director, Committee on Budget, HC
1997　Chairman, Committee on Transport, HC
1998　Elected to the HC (second time)
2000　(July) Parliamentary Vice Minister of Transport
　　(Dec.) Parliamentary Vice Minister, Hokkaido Development Agency (concurrently)
2001　(Jan.) Senior Vice Minister of Land, Infrastructure and Transport
　　(May) Senior Vice Minister of Land, Infrastructure and Transport (re-designated)
2002　Secretary-General, New Conservative Party (NCP) in the HC
　　Chairman, NCP Diet Affairs Committee in the HC
　　Director, Land, Infrastructure and Transport Division, NCP

2003　Senior Vice Minister of Economy, Trade and Industry

開会セッション

宮腰　光寛 氏　　略　歴



1950年12月21日生まれ

経歴：

1983年　富山県議会議員初当選（連続4期）、副議長
1998年　衆議院議員　初当選（補欠選挙）
2000年　衆議院議員　2期目　当選
（内閣）
2002年　小泉内閣　農林水産大臣政務官（1月8日～10月4日）
2002年　小泉内閣　内閣府大臣政務官（9月25日～11月19日）
（沖縄北方対策・個人情報保護・科学技術政策・原子力担当）
2003年　第二次小泉内閣　内閣府大臣政務官（11月20日～）
（沖縄北方対策・個人情報保護・科学技術政策・原子力担当）

（衆議院）
2000年　労働委員会　理事
2001年　沖縄・北方問題特別委員会　理事
2001年　厚生労働委員会　委員
2002年　農林水産委員会　委員
2002年　厚生労働委員会　理事（155～156国会）
2002年　沖縄・北方問題特別委員会　委員（155～156国会）
2002年　決算行政監視委員会　委員（156国会）
2003年　イラク支援特別委員会　委員（156国会）

（自由民主党）
1998年　組織本部　　青年局　次長
2000年　政務調査会　農林・社会　各副部会長
2001年　政務調査会　農林水産部会　部会長代理
2001年　政務調査会　農林水産・国土交通・総務　各副部会長
2002年　政務調査会　審議委員
農林水産部会　部会長代理
農林水産部会内水面小委員会 委員長
厚生労働部会　副部会長
港湾特別委員会・山村振興委員会　各副委員長

食育調査会　事務局長
国　際　局　次長
組織本部団体総局　法務・自治関係団体委員長

（その他）
2003年　北方領土返還・四島交流促進議員連盟（超党派）事務局

*See the other side for English

Mitsuhiro Miyakoshi

Date of Birth: December 21, 1950

Career:

2003 Parliamentary Secretary, Cabinet Office
Chief Secretary, Coalition of Members of the Diet for NorthernTerritories' Reversion and Promotion of People Exchange between Japan and Northern Territories (Provisional Translation)

2002 Parliamentary Vice-Minister for Agriculture, Forestry and Fisheries Director, Committee on Health, Labour and Welfare, the House of Representatives (HR) Chief Secretary, Research Commission on Food Education, Liberal Democratic Party (LDP)

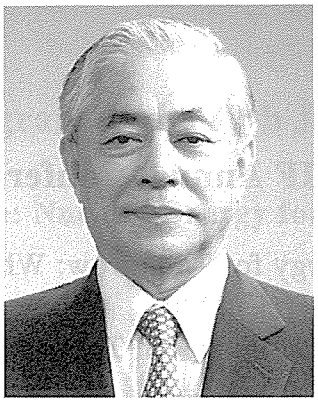
2001

2000 Director, Special Committee on Okinawa and Northern Problems, HR

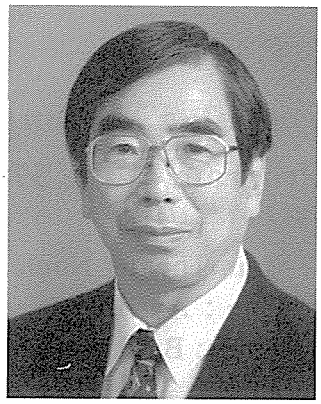
1998 Director, Committee on Labour, HR

1983 Elected to HR

1974 Elected to the Prefectural Assembly (Toyama Prefecture) Education
Studied at Kyoto University



Jun-ichi Nishizawa
JAIF Chairman



Yoichi Kaya
Chairman of the Preparatory Committee
for the 37th JAIF Annual Conference

The 37th JAIF Annual Conference
Main theme: Nuclear Energy for Tomorrow——What Are Our Tasks?

Japan Atomic Industrial Forum (JAIF) is pleased to announce the 37th JAIF Annual Conference to be held in Tokyo between April 21 and 23, 2004.

Last October, the Japanese government issued the country's first "Basic Program for Energy Supply and Demand." Nuclear power is highly expected to continue playing a major role as a key energy source in the program. However, the Japanese nuclear industry is facing various problems, such as the recovery of public trust in nuclear power sector, responses to liberalization of the electricity market, and establishment of the nuclear fuel cycle. The new Atomic Energy Commission started early this year, emphasizes the importance of clarification of basic principles for selection that meets public satisfaction with the nuclear energy policy, while the Japanese nuclear sectors are striving to find ways to achieve revitalization of the nuclear industry.

To take a global look, the major power failures that successively occurred in the United States, Italy, and other countries last summer highlighted again the importance of a stable supply of electricity and in this context the role of nuclear power. In the meantime, there are positive movements in the nuclear industry, such as an EPR construction plan in Finland and the "VISION2020" plan advocated by U.S. nuclear industries, which will promote new nuclear reactor construction. Maintaining knowledge and expertise to continue nuclear energy use is of great value shared by most nations with nuclear power programs.

It is with these backgrounds that we hold this year's Annual Conference, thinking about "nuclear energy for tomorrow." Aimed at seeking guidelines for the world nuclear industry to promote nuclear energy, the JAIF Annual Conference, with a target audience of 1,300 both from Japan and overseas, provides a platform to discuss crucial timely issues over a wide range from the development and utilization of nuclear energy to nuclear non-proliferation and global environment. The Conference also serves as a forum open to the public to have dialogues and enhance public awareness of these issues.

Program of the 37th JAIF Annual Conference

Main Theme: Nuclear Energy for Tomorrow: What Are Our Tasks?
Date : April 21(Wed.) - 23(Fri.), 2004
Venue: Bunkyo Civic Hall, Bunkyo-ku, Tokyo, Japan

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<tr><th>April 21(Wed.)</th><th>April 22(Thu.)</th><th>April 23(Fri.)</th></tr>
<tr><td>Registration (9:15～)</td><td rowspan="3"><u>Session 2</u>
(9:30～12:00)
"Our Challenges for Ten Years: Seeking a Sound Foundation for Nuclear Energy Development

〔Panel Discussion〕</td><td rowspan="3"><u>Session 4</u>
(9:30～12:30)
" How We Best Carry Out Fuel Cycle Back-End Projects amid Market Liberalization"

〔Panel Discussion〕</td></tr>
<tr><td><u>Opening Session</u>
(9:45～10:45)
〔Remarks〕
○JAIF Chairman
○Minister of MEXT
○Minister of State for Science and Technology Policy
○Minister of METI
○Chairman of the Preparatory Committee</td></tr>
<tr><td><u>Special Presentations</u>
(10:45～12:30)</td></tr>
<tr><td>Lunch Time
(12:30～14:00)</td><td rowspan="2"><u>Luncheon</u>
(12:30～14:30)
(Hotel Grand Place)

<u>Films on Nuclear Energy</u>
(13:00～)</td><td>Lunch Time
(12:30～13:30)</td></tr>
<tr><td rowspan="2"><u>Session 1</u>
(14:00～17:30)
"Key Elements for Sustainability In Future Society--- Energy in Context"

〔Panel Discussion〕</td><td><u>Session 5</u>
"Civil Society and Nuclear Energy"
(Small Hall)</td></tr>
<tr><td><u>Session 3</u>
(15:00～17:45)
"Maintaining Nuclear Knowledge and Expertise in Education and Industry in Transition"
〔Panel Discussion〕</td><td>Part Ⅰ (13:30～15:30)
NPO/NGO Forum
"These are Our Initiatives for Changing Environmental, Energy, and Nuclear Policies"
〔Panel Discussion〕

Part Ⅱ (15:45～17:30)
Public Dialogue
"Let's Think about Wealth in Life and Energy"</td></tr>
<tr><td><u>Reception</u>
(18:00～19:30)
(Hotel Grand Palace)</td><td colspan="2"></td></tr>
</table>

Program of the 37th JAIF Annual Conference

Main Theme: Nuclear Energy for Tomorrow: What Are Our Tasks?

Wednesday, April 21, 2004

Opening Session

9:45-10:45

Chairperson: Fumio Kawaguchi, President, Chubu Electric Power Co., Japan

<Remarks>

- Jun-ichi Nishizawa, Chairman, Japan Atomic Industrial Forum (JAIF), Japan
- Takeo Kawamura, Minister of Education, Culture, Sports, Science and Technology, Japan
- Toshimitsu Motegi, Minister of State for Science and Technology Policy, Japan
- Shoichi Nakagawa, Minister of Economy, Trade and Industry, Japan
- Yoichi Kaya, Chairman of the Preparatory Committee for the 37th JAIF Annual Conference; Professor Emeritus, The University of Tokyo; Director-General, Research Institute of Innovative Technology for the Earth, Japan

10:45-12:30

<Special Presentations>

Chairperson: Tadashi Okamura, President & CEO, Toshiba Corporation, Japan

Speakers:

- "Current Status of the Nuclear Policy in France"
  Alain Bugat, Chairman and Chief Executive Officer, Atomic Energy Commission (CEA), France
- "Position of Nuclear Power in China's Energy Strategy and Status of Nuclear Power Development in China"
  Kang Rixin, President, China National Nuclear Corporation (CNNC), China
- "Status and Future Outlook for Regulation of Nuclear Power Plants in the US (a Regulatory Program for the 21st Century)"
  Nils J. Diaz, Chairman, U.S. Nuclear Regulatory Commission (NRC), USA

Session 1

14:00-17:30

"Key Elements for Sustainability in Future Society —Energy in Context"

Chairperson:
Yoichi Kaya, Professor Emeritus, The University of Tokyo; Director-General, Research Institute of Innovative Technology for the Earth, Japan

<Keynote Speech>

- "For Building Sustainable Societies"
  Masaharu Shibata, Vice Chairman, Nippon Keidanren; Chairman & CEO, NGK Insulators, Ltd., Japan

<Panel Discussion> "Design of a Long-lasting Future Society"

Part I: 14:35-16:00
Panelists:

- Hideki Kato, President, Japan Initiative; Professor, Keio University, Japan
- Motoyuki Suzuki, Professor, The University of the Air; Special Programme Advisor for Environment and Sustainable Development, United Nations University, Japan
- Akihiko Tanaka, Director, Institute of Oriental Culture, The University of Tokyo, Japan
- Mariko Hasegawa, Professor, Waseda University, Japan

Part Ⅱ : 16:15-17:30
Panelists:

- Hideki Kato, ditto
- Motoyuki Suzuki, ditto
- Akihiko Tanaka, ditto
- Masao Nakamura, Science Journalist, Japan
- Masayuki Yajima, Senior Associate Vice President, Central Research Institute of Electric Power Industry, Japan

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Reception

18:00-19:30

Hotel Grand Palace 2nd floor "Diamond Room"

Thursday, April 22, 2004

Session 2

9:30-12:00

"Our Challenges for Ten Years: Seeking a Sound Foundation for Nuclear Energy Development"

Chairperson:

Yumi Akimoto, Senior Advisor, Mitsubishi Materials Corp., Japan

Part I: JAIF Report

- "A Path to Safe and Contributive Nuclear Power for the Society"
  Masao Takuma, Senior Managing Director, Japan Atomic Industrial Forum, (JAIF), Japan

Part Ⅱ : Panel Discussion

"Establish a Desirable and Appropriate System for Safety Assurance and Improved Performance"

Panelists:

- Hiroshi Iida, Advisory Editor, The Sankei Shimbun, Japan
- Akira Kawahara, Corporate Officer, Senior Chief Engineer, Managing Director, Hitachi Ltd., Japan
- Tetsuji Kishida, Executive Vice President, Kansai Electric Power Co., Inc., Japan
- Yoshihiko Sasaki, Director-General, Nuclear and Industrial Safety Agency, Ministry of Economy, Trade and Industry, Japan
- Yoshikazu Sasaoka, President, Federation of Electric Power Related Industry Workers' Unions of Japan
- Charles Dugger, Vice President, Nuclear Operations, Nuclear Energy Institute (NEI), USA
- Nils J. Diaz, Chairman, U.S. Nuclear Regulatory Commission (NRC), USA
- Kenzo Miya, Professor of Graduate School, Keio University, Japan

Luncheon

12:30-14:30

Hotel Grand Palace 2nd floor "Diamond Room"

Moderator:

Jun-ichi Nishizawa, Chairman, Japan Atomic Industrial Forum (JAIF), Japan

<Remark>
Shunsuke Kondo, Chairman, Atomic Energy Commission of Japan

<Remark>
Masaki Takahashi, Vice Governor, Niigata Prefecture

<Special Speech>
"Edo Culture and the Citizen's Wits"
Makoto Takeuchi, Director, Edo-Tokyo Museum

Session 3

15:00-17:45
"Maintaining Nuclear Knowledge and Expertise in Education and Industry in Transition"

Chairperson:
Yasuhiko Fujii, Professor, Research Laboratory for Nuclear Reactors, Tokyo Institute of Technology, Japan

<Keynote Speech>
- "Perspectives on the Future of Nuclear Education and Research in the United States"
  Larry R. Foulke, President, American Nuclear Society (ANS), USA
- "Importance of Ethical Education for Engineers and their Responsibilities"
  Kazuko Miyamoto, Director, Consumer Research Institute, Nippon Association of Consumer Specialists, Japan

<Panel Discussion>
Panelists:
- Masayuki Igashira, Associate Professor, Research Laboratory for Nuclear Reactors, Tokyo Institute of Technology, Japan
- Mitsuru Uesaka, Professor of Graduate School, The University of Tokyo, Japan
- Toshiro Kitamura, Senior General Manager, The Japan Atomic Power Company, Japan
- Kazuhiko Kudo, Professor of Graduate School, Faculty of Engineering, Kyushu University, Japan
- Shunichi Tanaka, Vice President, Japan Atomic Energy Research Institute, Japan
- Tatsuya Murakami, Mayor of Tokai village, Japan
- Itaru Watanabe, Director of Atomic Energy Division, Research and Development Bureau, Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan

Friday, April 23, 2004

Session 4

9:30-12:30

"How We Best Carry Out Fuel Cycle Back-End Projects amid Market Liberalization"

Chairperson:

Hiroyuki Torii, Professor, Tokyo Institute of Technology, Japan

<Keynote Speech>

- "A market view of electric power deregulation"
  Masanori Maruo, Director, Japan Equity Research, Tokyo Branch, Deutsche Securities Ltd.
- "Back-end Projects in the Japanese Nuclear Industry: What should be done now"
  Keiji Kanda, Professor Emeritus, Kyoto University;
  Director, Japan Energy Policy Institute, Japan

<Panel Discussion>

Panelists:

- Keiji Kanda, ditto
- Jean-Jacques Gautrot, Senior Vice President, International & Marketing, AREVA, France
- Makoto Satake, Director and Deputy Executive General Manager, Nuclear Power Division, Tokyo Electric Power Company, Japan
- Takao Shiokoshi, Managing Director and Editor in Chief, The To-o Nippo Press, Japan
- Kenji Yamaji, Professor of Graduate School, The University of Tokyo, Japan

Session 5

13:30-15:30

"Civil Society and Nuclear Energy"

Part I: NPO/NGO Forum

"These are our Initiatives for Changing Environmental, Energy, and Nuclear Policies."

Coordinator:

Yojiro Ikawa, Editorial Writer, The Yomiuri Shimbun, Japan

Commentator:
Yohji Uchiyama, Professor, University of Tsukuba; Member of Forum Energy Think Together (ETT), Japan

Panelists:
- Chiaki Aono, Steering Committee Member, Innovation of Japan
- Etsuko Akiba, President, ASCA Energy Forum, Japan
- Akifumi Ueda, Representative, Citizen's Science Initiative Japan
- Mika Obayashi, Director, Institute for Sustainable Energy Policies, Japan
- Hiroaki Kashiwaya, Representative, Environmental Guardian of GAIA, Japan
- Koji Sakamoto, Director, Social and Industrial Policy Dept., Federation of Electric Power Related Industry Workers' Unions of Japan

15:45-17:30
"Civil Society and Nuclear Energy"

Part Ⅱ : Public Dialogue
"Let's Think about Wealth in Life and Energy."

Coordinator:
Yoshiko Tsuchiya, Freelance Newscaster, Japan

Commentators:
- Terue Ohashi, Professor, International School of Economics and Business Administration, Reitaku University; Consumer Advisor, Japan
- Yukiko Suzuki, Freelance Writer, Japan
- Yoko Beppu, Professor, School of Human Science and Environment, University of Hyogo, Japan
- Others

Wednesday, April 21

Opening Session

9:45-10:45

Chairperson

Fumio Kawaguchi, President, Chubu Electric Power Co., Japan

Remarks

Yoichi Kaya
Chairman of the Preparatory Committee
for the 37th JAIF Annual Conference

Japan's energy policy stands at a turning point. In 2002 the Basic Law on Energy Policy Making was enacted, being followed in 2003 by the Basic Plan for Energy Supply and Demand. Its three fundamentals are: (1) Energy Security and Stable Supply; (2) Compatibility with Environment; and (3) Cost Competitiveness. Needless to say, securing safety of the energy systems is the absolute prerequisite in every aspect.

The Basic Plan for Energy Supply and Demand prescribes nuclear power as the basic power source to promote in the years ahead. But a lot of issues of concern also exist. None of key essential elements to close the nuclear fuel cycle, another important policy to promote as designated in the Policy Plan, has been realized as planned: reprocessing of spent fuels, fast breeder reactors, MOX fuel fabrication for plutonium utilization in thermal reactors, and final disposals of high level radioactive wastes. Furthermore, spent fuels discharged from and stored at the nuclear power plants are approaching their storage capacities at each site. No clear mechanisms are established yet who bear the back-end processing cost and how.

In view of slowed-down population growth and eventual decrease foreseen, quite a number of people share the view that the electricity demand in Japan will experience ahead a low growth rate. Nuclear power in Japan, already accounting for one-third of the domestic electricity production, will have to resign economically to the limited potential of penetration in the Japan's electricity market, which has a relatively low level base load over a year.

Under such circumstances we should not restrain ourselves to the particulars in the past when deliberating the future nuclear energy plan. We have to pursue as rational as possible logistics, socio-economically and technologically, how to proceed with nuclear power from comprehensive and long-term standpoints. World trend of nuclear power is an important input for this approach. Such awareness has led the 37th Annual Conference of the Japan Atomic Industrial Forum to a structure for providing an intensive forum to exchange in-depth discussions on the issues and withdraw any constructive notions for the future. We are very looking forward to hearing from you active and stimulating discussions.

[MEMO]

Wednesday, April 21

Special Presentations

10:45-12:30

Chairperson
Tadashi Okamura, President & CEO, Toshiba Corporation, Japan

Current Status of the Nuclear Policy in France

Alain Bugat
Chairman and Chief Executive Officer
Atomic Energy Commission (CEA), France

The topic chosen for this 37th edition of Jaif: "Nuclear Energy for Tomorrow: What are our Tasks?" is more than ever at the heart of today's concerns both in France and abroad. The future of electronuclear energy is consequently at the heart of our global concern.

The national energy debate in France

This debate was launched in the first half of last year under the aegis of the French Ministry for Industry. At the conclusion of this debate, the government drafted a framework law on energy to be presented to the Council of Ministers and then to Parliament for a vote in 2004.

The major orientations of this draft law bear chiefly on the need to reconcile two requirements: the energy supply, and consequently energy independence of our country, and the respect for the environment in a sustainable development perspective.

With 58 reactors in operation, the French nuclear facilities provide over 75% of the nation's electric energy needs in conditions of safety and for a kwh price that are among the best in Europe.

In the near future, the share of electricity produced from nuclear energy will undoubtedly diminish in France in order to create a better balance among the various sources of energy, but it will remain the dominant production mode.

The CEA, a key player in European research

The CEA is a major player in research, development and innovation.

In the field of energy, the CEA is seeking to improve the competitiveness and the safety of energy production means that do not produce greenhouse gases, while reducing their impact on the environment.

I wish to particularly elaborate on two points that are fundamental for the future of nuclear energy production: research on radioactive wastes and research on the nuclear power generators of the future.

Concerning radioactive wastes, we may note the very satisfactory results of research into the reduction of both the quantity and the toxicity of wastes and the also the long-term conditioning and storage of those wastes.

In 2006, in respect with the law, the French government and Parliament will decide on a set of solutions that will allow open and flexible strategies for the management of radioactive wastes.

Concerning the future of nuclear energy

The EPR reactor, developed by the Areva group, will be able, in 2015/2020, to meet the need for renewing the first set of nuclear facilities built in the last Seventies. After the Finish decision in December 2003 to buy an EPR, a first of the kind EPR in France is to be decided soon, as it was very recently confirmed by our Prime Minister.

The next forty years should therefore see the coexistence of Generations II and III as a natural transition to Generation IV reactors (with an optimisation of the reactor and the fuel cycle), of which the first models should appear around 2030.

It is chiefly in the framework of the Generation IV International Forum that the CEA has offered to develop its research efforts towards future reactors.

In conclusion, the conditions are now set for the revitalisation of the global nuclear market. For its part, the nuclear industry is mature and can rely on a considerable return of experience, 3rd generation reactors are already available and the 4th generation will receive its credibility thanks to an internationally shared R&D vision.

Position of Nuclear Power in China's Energy Strategy and Status of Nuclear Power Development in China

Kang Rixin
President, China National Nuclear Corporation (CNNC), China

The China National Nuclear Corporation (CNNC) is the major developer of technologies in the course of nuclear power development, and also the major investor of all nuclear power plants in operation and under construction in China.
The Chinese government explicitly makes clear the energy strategy in the "Specific Planning for Highlights of Energy Development during the Tenth Five-Year Plan" as to "safeguard the energy safety, streamline the energy mix, raise the energy efficiency, protect the ecological environment, continue and expand the open-up policy and quicken the pace of development in the western region". And the principle for development of power industry is also established as to "actively develop hydropower, optimize thermal power structure, moderately develop nuclear power, and develop new energy adapting to local conditions."

The principle of the Chinese government to "moderately develop nuclear power" and the objective of nuclear power construction to "commence a localized backstop nuclear power project as appropriate" during the Tenth Five-Year Plan affirm the position and significance of nuclear power in the energy development in China. Nuclear power is positioned to an experimental and compensating source in the energy mix of China.
The planning for nuclear power development in China is preliminarily envisaged to reach 36~40 GW of installed capacity by 2020, accounting for 4% of the total power installed capacity.

Nuclear power will play a more important role in promoting a diversified energy mix, upgrading the energy safety, and improving the energy mix in China.
For the moment, there are 6 NPPs with a total of 11 nuclear units in operation or under construction, among which 8 were put into commercial operation and the remaining 3 under construction. They are expected to put into commercial operation prior to the end of 2005, and till then the nuclear installed capacity will be totaled up to 8.7 GW.

Now China has in possession of a system for self-construction of small and medium-size PWR NPPs involving the R&D, design, equipment manufacturing, construction and installation, commissioning and operation. Three major inter-supporting power equipment manufacturing bases are formed in the Northeast,

Southwest of China and Shanghai. China has had the preliminary basis for self-design and equipment localization of large 1000 MW-class PWR nuclear power plants.

A "three-step" principle is adopted by the Chinese government for the application and development of nuclear energy, i.e. thermal neutron reactor, fast breeder reactor and controlled thermal nuclear fusion reactor.

China adopts a phase-in strategy for nuclear power development. For the moment, we mainly focus on the construction of technically proven and safe PWR units following the principle of "mainly relying on our own while pursuing Sino-foreign cooperation", meanwhile we carry out the R&D on advanced PWRs and HTGRs, and develop advanced technologies with independent intellectual property; advanced PWR units with independent intellectual property will be constructed in large quantity after 2010; the type of nuclear units to be constructed after 2020 will be more advanced, with safety and economics further improved.

At present, competent authorities of the Chinese government are taking active steps to map out and implement the planning of nuclear power development, with an aim to bring its development into line. In the principle of "mainly relying on our own while pursuing Sino-foreign cooperation, and introducing technologies while promoting localization", China's nuclear power construction will be steadily surging forward towards self-reliance and standardization.

Status and Future Outlook for Regulation of Nuclear Power Plants in the US (a Regulatory Program for the 21st Century)

Nils J. Diaz
Chairman, U.S. Nuclear Regulatory Commission (NRC), USA

The regulation of nuclear power plants in the US has an established and functional foundation, yet it is in a transitional phase. Building on the traditions, approaches and decisions of the past, we are developing, testing and using our most modern safety methods and technologies, including risk-informed and performance-based regulation based on realistic conservatism, to prepare a regulatory program for the 21st century. The existing regulatory fabric, woven piece-by-piece, and stitched together during the 1960's, 70's, 80's and 90's, has served us well; but that patch-work is not a suitable basis for future regulation and definitely not for a new generation of nuclear power plants. We need, and we will construct, a regulatory program that is suitable for and in-phase with the technological developments of the 21st century.

The NRC is continuing our strong oversight of 104 operating reactors and our review of applications for license renewal, power up-rate, and other licensing changes. Furthermore, standard design certification work is ongoing and we have begun our oversight of new areas, including Early Site Permits and Combined Operating Licenses. New reactor design and pre-application work is also being conducted. The new regulatory fabric is being woven, in a systematic, disciplined and open manner.

[MEMO]

Wednesday, April 21

Session 1

"Key Elements for Sustainability in Future Society —Energy in Context"

14:00-17:30

Chairperson

Yoichi Kaya, Professor Emeritus, The University of Tokyo; Director-General, Research Institute of Innovative Technology for the Earth, Japan

Preservation of the natural environment, peace and stability in society, food and water resources, a stable supply of energy, science and technology to provide convenience and well-being – each of these is an element in allowing people to enjoy culturally active lives. And because those elements are interconnected, it is important to look at associated problems from multiple viewpoints – to understand each in the context of its relationship to the others – and to seek appropriate solutions.

In this session, a keynote speaker will offer an outlook for the economy and sustainable development in industry, and consider what human life and society should be like in the future. In a panel discussion, learned people from various fields will explore visions of that future, from their distinct professional perspectives, but in terms of certain essential conditions – requirements – including that we achieve and continue sustainable development. This session is to serve as an opportunity to ask nuclear sectors, and public as well, to think about these issues.

For Building Sustainable Societies

Masaharu Shibata
Vice Chairman, Nippon Keidanren;
Chairman & CEO, NGK Insulators, Ltd., Japan

Republic of China is the international economic growth driver with its annual GDP growth rate of 8% owing to the introduction of free market economy and foreign investments. Every session of Chinese participation at this year's economic forum in Davos, Switzerland, was fully packed. On the other hand, some people share a concern over possible inflation originating from China, as seen in Japan, because of tightened supply of raw materials in the international market like steels, copper or pulp due to strong Chinese demands. Water consumption is also increasing, leading to anxiety about water scarcity. China has set a goal of quadrupling its GDP in 2020 over 2000. When Japan experienced this high economic growth of two digits, it was the time when the nation's population was in the order of 100 million. The rapid economic growth of China with the population of 1.3 billion cannot avoid big impacts on the world economy and the global environment. It is not solely the issue of China, but the global issue how to secure sustainable development of world economy, while protecting the environment.

Globalization has also caused various disparities among nations, which are expanding. In Africa 300 million people had to live with daily expenses of less than 1 US$ in 1999. In 2115 the number is foreseen to reach 350 million. A differential is also expanding between the people who can access the Internet service and who can not. Unless this trend is mitigated, the world may be led to instability.

Mass production, mass consumption and mass disposals in the 20th Century caused various large-scale problems such as environmental pollution, increased amounts of wastes or global warming. The 21st Century is a century of environment for urgently tackling these problems. Japan has succeeded in developing energy-saving and material-saving technologies. By further developing and applying the technology of recycling in various sectors, Japan should hurry to build up a "recycling" community and contribute to the preservation of the global environment using these advanced technologies. The Nippon Keidanren declares this approach as the "nation of environment" strategy in its renewed vision.

It is a vital challenge at the outset of the 21st Century to narrow various disparities, while preserving an acceptable global environment. In Japan we traditionally respect the feeling of "frugality". This notion will help our nation's mission building a sustainable recycling community.

Hideki Kato
President Japan Initiative
Professor, Keio University, Japan

1. It must be said that science, technology and mineral resource energies have enabled us to enjoy the prosperity of modern civilization. However, negative effects have become outstanding within from global environmental issues to habits in our daily lives. It is our long-term goal how to deal with these issues in both energy supply and consumption sides.
2. At the same time, individual lifestyles, state administration and international relations that we are facing every day cannot be premised on the utopianism. It is the daily affairs of all social players (individuals, enterprises, State, etc.) to maintain a stable lifestyle, strengthen corporate competitiveness and ensure food and energy. In addition, states of different level of economical prosperity achievement have to compete and cooperate with each other at the same time.
3. How can we solve these contradictory issues mentioned above? In addition, how can we set the national strategy and policy objectives? A frank and serious discussion is needed and the political initiative must be tested as well.

   I would like to think about these issues by using as keywords such as "concentration and decentralization," "global and local," "public and private," "the State and enterprises."

Motoyuki Suzuki
Professor, The University of the Air, Japan
Special Programme Advisor for Environment and Sustainable Development
United Nations University

Akihiko Tanaka
Director
Institute of Oriental Culture
The University of Tokyo, Japan

Mariko Hasegawa
Professor
Waseda University, Japan

Masao Nakamura
Science Journalist, Japan

The problem of predicting future

1. Global warming increases unusual weather, natural disaster, water famine.
2. Environmentally adapted energy system: renewable energy, nuclear energy, fuel battery car.
3. Utilize unused brain channel: sense of acoustic, sight, taste and smell.

How to Secure Sustainable Development under the Introduction of Competition?

Masayuki Yajima
Senior Associate Vice President
Central Research Institute of Electric Power Industry, Japan

The main objective of energy policy in the 1970s and the first half of the 1980s was securing energy security. But from the latter half of the 1980s, energy-related environmental problems (the impact of the use of energy on the environment) began to play an important role. At the same time, energy policy attached importance to efficiency, e.g., liberalization of energy markets. Nowadays, as energy policy has multiple purposes, the harmonization of liberalization, energy security, and environmental policies is required.

However, in the process of world-wide deregulation and amid growing concerns about global climate change problems, priority has been given to liberalization policy and environmental policy. Emphasis was not placed on energy security in the last quarter of the 20th century. Also, the harmonization of liberalization policy and environmental policy has not been considered much. However, with the advent of the 21st century, discordance of various policies brought about serious problems. From the middle of 2001 to the beginning of 2002, "California Crises" broke out in which wholesale prices skyrocketed, severe blackouts occurred, and Pacific Gas and Electric went bankrupt. In California, due to stringent environmental regulations, the construction of power plants was very difficult, which is said to have contributed to the crises. In cases where enough power plants and transmission capacity do not exist, security and efficiency will not be attained as a result of competition. California had to pay for not having taken into account the harmonization of environmental policy and energy security policy. Also, in some European countries, heavy involvement in environmental policy caused price increases that cancelled the cost-down effect of liberalization. In these countries, cost and benefit of promotion of renewables will have to be strictly weighed in future.

On the other hand, liberalization policy has influenced energy security. In Europe and the US, the "dash for gas" phenomenon is emerging, causing gas supply security problems. In the summer of 2003, serious blackouts occurred in the northeast of the US and many countries in Europe. These occurrences led policymakers to recognize the importance of energy security. In the US, it is pointed out that the blackouts were partly due to the fact that not enough transmission facilities were built and existing facilities were not maintained sufficiently due to the progress of liberalization in the electricity markets. Further, in a competitive environment, it will be difficult to build large-scale

power plants like nuclear power stations due to an increase in financial risks. Therefore, in countries like Japan where nuclear power development is recognized as the only large-scale economic solution to reduce CO_2 emissions and to increase security of supply, liberalization poses a serious problem from the viewpoints of environmental policy as well as energy security policy.

As in the context of nuclear energy and its role in solving environmental and security problems, it is argued that the presence of market failures requires a higher share of nuclear investment than at present. The principal market failures derive from the inability of markets to take account of the external effects of fossil fuel combustion and instability of fuel supply. This means that larger investments than in more competitive markets should be encouraged by means of subsidies, taxes on substitutes or direct control.

[MEMO]

[MEMO]

Thursday, April 22

Session 2

"Our Challenges for Ten Years: Seeking a Sound Foundation for Nuclear Energy Development"

9:30-12:00

Chairperson

Yumi Akimoto, Senior Advisor, Mitsubishi Materials Corp., Japan

It has been half a century since the road was opened to the peaceful uses of nuclear power, and social economies around the world have enjoyed the fruits. Human wisdom can be expected to expand the peaceful applications still further, benefiting peoples, their economies and the environment even more.

In Japan, however, recent problems, mishaps and accidents have eroded the trust of the people, causing delays in the implementation of various nuclear programs. Together with the on-going liberalization of power markets, the environment surrounding nuclear energy is becoming increasingly severe. People involved in nuclear development are required to essentially start from scratch, tackling basic problems one after another by cooperating with each other, in terms of the initial, fundamental role nuclear power was intended to play.

In this session, the Japan Atomic Industrial Forum will report on its studies for a long-term vision of nuclear development, and identify issues for the next ten years. In the light of that presentation, and with an eye toward an appropriate mechanism for ensuring safety – the immediate problem for the nuclear industry – a panel discussion will then consider private-sector's self -imposed measures for safety assurance, and the nature and content of necessary regulations. The example of the United States, where the public and private sectors worked together to build a reasonable, scientifically based regulation system, will be referred to. Efforts to win public trust will also be discussed.

A Path to Safe and Contributive Nuclear Power for the Society

Masao Takuma
Senior Managing Director
Japan Atomic Industrial Forum (JAIF), Japan

"Atoms for Peace" is now 50 years old since US President Eisenhower addressed it in 1953 at the 8th General Assembly of the United Nations. Japan's first LWR started its commercial operation in 1970, more than 30 years ago. Nuclear power has grown to a kind of "National Goods," providing more than 30% of domestic electricity production by fifty-two units with the total capacity of 46GW.

In the early years of deployment in 1970s capacity factors of LWR plants remained low. But they elevated to exceed 80% in 1995 owing to nationwide efforts (industries-government-academics) for overcoming technical troubles and for improvement and standardization. In the face of deregulation, further improvement of economics is now needed, with first priority to safety. To the contrary, improvement of capacity factors remains stagnant and they are far behind those in the US and the Republic of Korea. What is needed now is to develop rationalized and efficient regulations with proper self-imposed safety management behind.

Over the past decade people's reliability on nuclear power was greatly lost due to repeated accidents and scandals. The delayed introduction of "Standards of Fitness-for-service of Nuclear Power Plants" was one of causes of the TEPCO case. But the essentials behind are problems of the safety culture, legal compliance and governance of expert groups in the relationship between technologies and society. Repeated accidents and scandals have delayed or suspended implementation of important nuclear policies. Really the past decade is the "Lost 10 years."

When we face up to the reality of growing economies in developing countries and enormous expansion of world energy consumption foreseen, particularly in the Asian region, industrialized countries are obligated to lower their dependence on conventional fossil fuels and consequently stabilize long-term energy supply by extensive use of non-fossil fuel resources and reduce greenhouse gas emissions. Full utilization of uranium resources should be also an option using fast breeder reactor deployment. Peaceful utilization of nuclear energy is indispensable for the sustainable development of human societies. Sound maintenance and development of nuclear power are not necessarily rejected by the society in Japan.

In view of this importance of nuclear power, the Japan Atomic Industrial Forum, Inc. has examined at its "Nuclear Reactor Development and Utilization Committee" current issues to overcome for maintaining nuclear power as an irreplaceable option for our society. Twenty action items have been identified as its recommendations, "What

should be done in the upcoming 10 years", in the form of the industrial sector's own commitments and requests to the government. It aims to clarify the codes of conduct for atomic industries, to show them to the society and share the issues to solve in collaboration with a wide spectrum of stakeholders.

Prime responsibilities for nuclear safety rest with the nuclear business firms. It is their top managers' obligations to implement thorough security measures under own errorless governance. Examples are to have safety culture take root throughout the organization from top to bottom, and to execute all possible actions for security including quality assurance and quality control. In order to make such self-imposed security programs more effective scientifically and rationally, necessary is to integrate industry-wide efforts in collaboration with academics, and to reform, in line with them, their consciousness, organizational systems and structures. Thus, nuclear industries and academies must contribute to the scientific and rational safety regulatory system through frank and open negotiations with government authorities. Proper regulations will lead to effective safety, and consequent improvement of capacity factors of nuclear power plants and economic competitiveness will add values to the nuclear power as "National Goods." JAIF commits itself, as the core organization of the industrial sector in Japan, to conducting necessary reform and strengthening its activities for developing sound nuclear industries.

Hiroshi Iida
Advisory Editor
The Sankei Shimbun, Japan

Forty years are gone since the introduction of nuclear power in Japan. After ups and downs the first loading of plutonium fuels in thermal reactors in Japan, the so-called "Pu-thermal," is foreseen this year at the Takahama Nuclear Power Station, Kansai Electric Power Companies. In the coming decade ahead vital is to manage realizing the ultimate goal of fast breeder projects for completing the nuclear fuel cycle.

Why can we not do without nuclear power? Many people were of a view in the last couple of years that nuclear power with no greenhouse gas emission is essential to meet the goal of the "Kyoto Protocol" for protecting the global environment, especially for avoiding global warming. But the worldwide energy environment has dramatically changed due to the high economic growth of China preparing for the 2008 Olympics and the political instability in the Middle East. Without nuclear power Japan, a nation of minimal natural resources, may be compelled to jeopardize even its sovereign existence, until nuclear fusion deployment become realistic.

The number of nuclear power plants (NPPs) in Japan has increased to the present 52 from only five in 1973, the time of the first oil crisis. But the accidents at the Three Mile Island (TMI) in US and Chernobyl in the former USSR have slowed down drastically the inertia of building new NPPs.

The biggest drawback of the "Once-through" advocates is, besides the low efficiency of uranium utilization, that no specific and realistic solutions are proposed regarding how to manage the spent fuels already discharged and currently stored at each NPP site and how costly it is.

With the consent of the local government of Fukui a new plant construction is foreseen to start at long last. Still the nationwide goal of "30% more NPPs" is very unlikely to reach despite the declaration of the fundamental countermeasures for global warming. This is caused by the local residents' new anxieties towards NPP safety initiated by the information falsification case of the Tokyo Electric Power Companies (TEPCO).

Those TEPCO NPPs are really dangerous, then? No, there are no technical, engineering and scientific dangers. But the endorsement of safety by the Nuclear Safety Commission or the Nuclear and Industrial Safety Agency is found to be insufficient to relieve the citizens.

Safety can be expressed quantitatively in terms of probabilities, safety goals or risk analyses, whereas anxiety is unquantifiable. Even a single person's fear could demand

endless efforts to solve.

Strengthened regulations of NPPs in the revised Electric Utilities Law are in principle favorable. Questionable, though, is that some inspections conventionally practiced on the voluntary basis by the utilities are now legally required. Introduction of the "Standards of Fitness for Nuclear Power Plant Service" in replacement of the conventional "Technical Specifications" is commendable, better than being too late.

It is a favorable approach to disclose various results of regulated administration to the public for their criticism. I may even propose an administrative frame, in which a local government staff (staffs) be stationed for continuous monitoring at the nuclear plant sites. Continuous monitoring by the local colleagues might facilitate psychological comfort of local citizens. Utilities should bear the staff salary. The staff should be offered an advanced promotion upon completion of service of a couple of years. Candidate staffs obtain higher knowledge at the Japan Atomic Energy Research Institute (JAERI) prior to his/her service.

My own experience shows that participants in the JAERI training course of nuclear power raise sophisticated questions. Participants from local communities are especially serious in studying nuclear, because nuclear safety is very relevant to their daily life. Better knowledge will hopefully mitigate the so-called "psychological anxiety," which 70% of Japanese nationals have. It will eventually foster incentives for nuclear power.

For Establishing a Mechanism to Secure Nuclear safety: Missions of Plant Manufacturers

Akira Kawahara
Corporate Officer, Senior Chief Engineer
Managing Director
Hitachi Ltd., Japan

With two main pillars, technology transfer from overseas and national technology development, nuclear power plant manufacturers in Japan - "Nuclear vendors" – have contributed to the promotion of nuclear power production. However, recent trend of electricity demands relaxation and deregulation of power industry have slowed down nuclear power plant constructions. Nuclear vendors share the view that a decade ahead is of critical importance.

The Japanese Government Basic Energy Plan, enacted in October 2003, prescribes that "nuclear power will be promoted as the basic power source with secured safety as a prerequisite." It is our belief that nuclear power plant construction be promoted as a national policy. Nuclear vendors' major mission therein is to provide power utilities with safe, reliable and economically competitive nuclear power plants and nuclear fuel cycle facilities. As a matter of fact we have developed ABWRs and APWRs, through the authorities "revolution and standardization" projects and joint research programs in collaboration with electric utilities.

Nuclear vendors are required to preserve and improve their technical capabilities (engineering, design, construction, tests and commissioning as well as inspections, maintenance and refurbishing of the plants). It is our obligation, too, to further upgrade their technical qualification for the nation's energy security and environmental protection. Intensive R&D programs in the near-, mid- and long-terms are very essential: scheduled construction of new plants and performance improvement of existing plants in the near term, development of next generation LWRs and innovative SMRs in the mid-term, and completion of the fast breeder reactor nuclear fuel cycle in the long term.

Concerns exist on the other hand, that is, moral degradation of nuclear engineers. This may be caused by the fact that existing nuclear power plants in Japan are inferior in performance such as their capacity factor or occupational exposure control at the time of periodic inspections or refurbishments to those plants in other nuclear family countries. It may also come from uncertain or blocked development potential of nuclear industries due to the current disfavor of the community. This will lead to lesser competitiveness of Japanese nuclear vendors in the domestic and international market due to the increase of unit of electricity generated cost. Reduced sales of nuclear vendors in Japan have already

caused the declining number of nuclear engineers in service and the declining R&D investments. These are beginning to jeopardize the preservation of technologies and human resources of nuclear vendors.

We believe preservation and upgrading of nuclear technologies are indispensable in order to secure stable energy supply, while being in harmony with environment. Top priorities for nuclear vendors are: continued practice of safety culture; conservation of plant integrity by means of systematic accumulation and evaluation of operation and maintenance experiences; and intensive preservation and upgrading of technological capabilities. Furthermore, soonest introduction of scientific and rational regulations like risk informed regulation is needed. Important in this regard is collaboration of public and private sectors. In consideration of preserving and upgrading nuclear engineering infrastructures for contributing to the national policy of nuclear power, comprehensive policy-making in line with the so-called "Nuclear TSCM*" is absolutely needed involving universities, the new united body of JAERI and JNC, electric utilities, nuclear vendors and specialized nuclear component suppliers.(*Total Supply Chain Management)

Establishing Safe and Steady Nuclear Power

Tetsuji Kishida
Executive Vice President
Kansai Electric Power Co., Inc., Japan

Nuclear power accounts for approximately 30 percent of Japan's electric power generation and is positioned as a major energy source in the Basic Plan for Energy Supply and Demand, which was endorsed by the Cabinet and reported to the Diet in October 2003.

However, a series of scandals in the nuclear industry in recent years eroded public confidence and the capacity factor of the nuclear power plants remained below 80 percent in both 2002 and 2003. As a result, the Electric Utility Industry Law and related nuclear regulation were revised in December 2002 to require electric power companies to conduct periodic utility inspections on a voluntary basis. At the same time, power companies are required to propose a system for carrying out these inspections for review by the regulators and to maintain records of utility inspections. The amendments divided mandatory inspection items into periodic inspections and periodic utility inspections according to their importance and required power companies to prescribe quality assurance activities in the technical specifications and to have these activities examined by the regulators. A new nuclear safety regulation system took effect in October 2003. This new regulatory system is based on the concept that nuclear operators should ensure safety through self-discipline and autonomy, and that the nation should ensure safety by checking not only the integrity of facilities but also the processes and safety activities.

In the meantime, the Japanese government has taken steps to deregulate the electricity market, and has already opened up 30 percent of the country's electric power retail market, allowing non-utility power producers to sell electricity to large users. The government plans to open the power market much wider, by 40 percent in fiscal 2004 and by 60 percent in fiscal 2005. Despite these changes, nuclear power remains of paramount importance in Japan, and the Japanese electric power industry is determined to make full use of the existing nuclear power plants to allow nuclear power to serve as a key power source. To this end, continuing safe and steady operations of nuclear plants and making nuclear power cost competitive are crucial. As nuclear operators, we expect the safety regulations to be more rational, practical and effective so that we can raise the capacity factor of nuclear power plants on the safety-first principle.

Besides raising the competitiveness of nuclear power, it is equally important to restore public confidence in the nuclear power industry. We are therefore promoting the

information disclosure and communication with the general public. In October, we set up the nuclear power database "NUCIA" on the Internet. The nuclear power business cannot function without the understanding and trust of the general public. We will continue to provide accountability to the public and transparency of nuclear plant operations.

In Pursuit of Establishing Better Organizations for Securing Nuclear Safety

Yoshihiko Sasaki
Director-General
Nuclear and Industrial Safety Agency
Ministry of Economy, Trade and Industry, Japan

The Nuclear and Industrial Safety Agency (NISA) has recently carried out radical reviews of nuclear safety regulations through the revisions of the Electric Utilities Law and the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors, based on the experiences of various nuclear scandals in the year 2002. Specifically, supervision of quality assurance programs of nuclear business firms have been strengthened, legal obligations of periodic inspections have been brought into force and the robustness evaluation of aged facilities have been institutionalized. The so-called "Double check system" by the Nuclear Safety Commission has been also strengthened. The Japan Nuclear Energy Safety Organization, an incorporated administrative agency newly founded in October 2003, has started its activities for securing nuclear safety, together with us, by undertaking part of government inspections.

The top mission of our organization is to let this new safety regulation regime penetrate into nuclear community. We are seriously fulfilling our mission, including improvement of inspectors' qualification. Nuclear business entities are requested in return to take the intentions of the revisions on and to make every possible effort towards establishing safety culture and compliance among their own employees as well as their subcontractors.

Our organization is also trying our best through intensive public relations and public hearings to recover their trust in nuclear safety and foster their comfort.

We devote ourselves to continuously revise the safety regulatory regime with transparencies upon scientific and rational assessment. Starting with reviewing the inspection systems incorporating risk assessment or performance evaluation of nuclear facilities, our commitments continue to the formulation of clearance criteria of radioactive wastes in harmony with international standards, preparation of the legal framework for safety regulations for disposing high level radioactive wastes, and fixing regulatory criteria for reprocessing or MOX fuel fabrication businesses. Furthermore, strengthening of technical qualifications in longer terms is another constituent of our mission for safety regulation, such as basic researches or human resources development for nuclear safety. More effective and efficient practice of regulations for all nuclear facilities is another goal of ours, through not only inspections but full use of risk information. Preparation of regulatory framework for TRU wastes or uranium wastes is also on our agenda.

All stakeholders' participation, the authorities, business entities and academic experts, in an open process for revising safety regulations is needed in order to secure scientific and rational judgments as well as transparency. The regulatory body commits itself to sincere considerations to the proposals/requests with scientific and technical justifications.

While continuing with all possible efforts to increase the regulation effectiveness through good practicing of safety regulations and to upgrade the reliability of regulation, we commit ourselves to continuously upgrade the nuclear safety regulation regime based on latest scientific and technical expertise.

What and How Can the Labor Union Do for Securing Safety and Comfort?

Yoshikazu Sasaoka
President
Federation of Electric Power Related Industry Workers' Unions of Japan

1. Points of background

- Despite the reality of Japan as the only nation hit by atomic bombs, Japan prescribes nuclear power as its basic power source and promotes its deployment.
- The labor unions have been also involved in the nuclear programs with concerns over working environment of broad spectrum of nuclear workers for plant constructions, plant maintenance or even cleaning businesses, and with public awareness.
- In our view energy security should premise safety and environmental protection. We have energetically grappled with our own proposals to nuclear power policies since late 1950s.

2. The basis of safety is Individuals

- We are making our endeavors to exterminate any workmen's accidents, understanding that workmen's safety is the very basis of local people's, and consequently the nation's safety.
- Safety at nuclear power plants has been secured by the national and self-imposed regulations or stringent technical standards.
- But the reality is that safety is secured by the workmen's skills and mentalities, not the texts of regulations, just as technical standards are observed by the workmen's skills of manufacturing and repairs.
- Therefore, in order to establish firm comfort among local citizens and the nation, it is vitally important to show to the public how earnestly site workers are doing their obligations, not only to show the statistics of safety or safe operations at nuclear power plants.

3. What the labor unions are doing for recovering people's comfort?

- Immediately after the outbreak of nuclear scandals of electric utilities two years ago, laborers' groups have been struggling with preventing recurrences of similar events through newly established "Trust Recovery Committees."
- Its main pillars are: Strengthened check-up of business management; Establishing individuals' ethics of conduct; and Closer teamwork of all nuclear workers. To these ends, foundation of proactive labor unions is urgently needed.

4. Labor unions should meet social responsibilities

- Social responsibilities of business firms are widely stressed in recent years. Labor unions also have obligations to meet social responsibilities for securing nuclear safety through participation in the check-up processes of business management, etc.

Kenzo Miya
Professor of Graduate School
Keio University, Japan

A system to secure nuclear safety is firmly maintained by electrical utilities, the regulatory authority, fabricators and academic societies with respective roles. They are normally functioning in the technical and juridical senses at the present with application of various laws, and codes and standards. Development activities of codes and standards in Japan have been very significant recently despite of 20 years delay compared with the activities in USA. These codes and standards are providing basis of technology for security of nuclear safety leading to formation of spiritual relief of the public against nuclear power station. In spite of these situations, inconsistent social phenomena are observed frequently in terms of strong requirements from a municipal government that are difficult to be persuaded in the common and technical sense. Inconsistent actions by municipal governments are very strong and compulsive to utilities utilizing public anxiety or concern against safety issues of nuclear power plants. It is without doubt that proper actions must be taken to reduce the public anxiety if it is present.

However, there are many habitants living in areas close to nuclear power stations and are working there. They know how severely safe operation and careful maintenance of such plants are conducted to achieve higher level of nuclear safety leading to higher level of credibility to safety aspect of such plants among the public. Those habitants are silent majority when a municipal government expresses publicly safety anxiety or concern with failure of nuclear safety. In view of patterns of organizations responsible for safe operation of nuclear stations in these years, confusion of regulatory order is observed frequently among electrical companies, the regulatory authority of the government and municipal government. This might be due to lack of social moral necessary to make given roles of those organizations workable, therefore it is important to establish a rule in a limited sense or a moral in a general one. With recognition that nuclear energy is necessary at this moment and will be indispensable to survival of human beings particularly from a view point of huge energy consumption in future giant countries like China, India, Brazil etc. requiring the public to confront global use of nuclear energy.

In this paper, the author wishes to make two proposals to establish favorable moral useful to well-organized nuclear regulation of nuclear power stations to acquire support from wide ranged public. The first is to establish a national regulation conference that consists of utilities and the regulatory authority as a main part of it attended by representatives from municipal governments and recommended experts from academic societies. Rigorous discussions on specific and very important topics are made between

utilities and the authority basically, and opinions and comments are expressed by the representative and the experts. Final decisions should be made by the authority in consideration of useful idea, comments, opinions and proposals expressed there.

The second is to create NPO(Non-Profitable Organization) aiming at absorption of wide ranged opinions among public and reflection of them on regulatory policies. These two proposals will be useful to improve current political climate in the nuclear regulatory system in Japan.

Nils J. Diaz
Chairman
U.S. Nuclear Regulatory Commission (NRC), USA

Changing Regulation in the Unites States through a Cooperative Effort between the Industry and the Nuclear Regulatory Commission

Charles Dugger
Vice President
Nuclear Operations
Nuclear Energy Institute (NEI), USA

This discussion will cover some of the history of regulation in the Unites States and the changes that have occurred in the past fifteen years. Included in the discussion are the authors opinions on what has driven the change in regulation and the success factors.

[MEMO]

[MEMO]

Thursday, April 22

Luncheon

12:30-14:30

Hotel Grand Palace 2nd floor "Diamond Room"

Moderator:
Jun-ichi Nishizawa, Chairman, Japan Atomic Industrial Forum (JAIF), Japan

Remarks:
Shunsuke Kondo, Chairman, Atomic Energy Commission of Japan

Masaki Takahashi, Vice Governor, Niigata Prefecture

Special Speech:
"Edo Culture and the Citizens' Wits"
Makoto Takeuchi, Director, Edo-Tokyo Museum

Remark

Shunsuke Kondo
Chairman
Atomic Energy Commission of Japan

Edo Culture and the Citizen's Wits

Makoto Takeuchi
Director, Edo-Tokyo Museum

[MEMO]

[MEMO]

Thursday, April 22

Session 3

"Maintaining Nuclear Knowledge and Expertise in Education and Industry in Transition"

15:00-17:45

Chairperson

Yasuhiko Fujii, Professor, Research Laboratory for Nuclear Reactors,
Tokyo Institute of Technology, Japan

Education in nuclear science and engineering at universities, which has maintained the nuclear industry's technological foundation, is now changing drastically in the context of administrative reforms that are recasting graduate schools and national universities as independent administrative bodies, and of the maturity of nuclear technology and delayed construction of nuclear plants. Efforts to rebuild a new educational system are multi-faceted and dynamic; they include curriculums incorporating ethics and philosophy; graduate schools linked with research and development institutes; the establishment of new nuclear-related graduate schools making use of regional characteristics; and a vision of graduate school's fostering human resources – people who can be active internationally – and that are even open to members of industry. All of this reflects the fact that for the worlds of industry and of R&D institutions, education and the development of human resources are important tasks. Thus, the dynamic movements in the industrial, public, and academic sectors regarding nuclear-related education and technological know-how are being seen here and abroad.

In order for the nuclear industry to continue its development of what is officially described as a "key power source" for the nation, maintaining education, ethics and the technological foundation are essential. Seeking measures for the sound development of nuclear power in severe times, this session will consider the current state of the "rebuilding" of nuclear education (which is in transition domestically and internationally), government supports for education and technological development, and how industry, the public sector and universities should be linked in the areas of education and technological development.

Perspectives on the Future of Nuclear Education and Research in the United States

Larry R. Foulke
President
American Nuclear Society (ANS), USA

This presentation will review the status of nuclear education and research in the United States relative to the prospects for the future of nuclear science and technology.

It is inevitable that new nuclear power plants will be built in the United States. Environmentally clean nuclear power is a vital part of the nation's electricity supply. Currently, 103 nuclear power reactors produce approximately 20 percent of the electricity consumed. While our system for nuclear education and research has survived a difficult period of down sizing, more needs to be done to ensure its long-term viability.

Throughout the 1990's, a number of nuclear engineering departments disappeared from universities; some were dropped and others were absorbed in other engineering programs. Top-class students were attracted into other fields. The number of research reactors has declined seriously. However, even though nuclear engineering education in the United States is currently experiencing a renaissance due to a positive environment for nuclear power in the United States, there are still challenges facing us with regard to ensuring the future workforce, retention of specialized knowledge, and the long term maintenance of a healthy educational infrastructure.

The demographics of personnel in the current nuclear industry in the United States are skewed towards the older generation. The faculty aging problem is similar to the demographic problems in the nuclear laboratories, government and industry. We are facing the same problem of replacing our leaders in the universities as we are in the rest of the enterprise.

The Nuclear Energy Institute has estimated that there will be a need for 90,000 new persons with nuclear science and technology skills over the next decade. Because of the aggressive programs for promoting nuclear careers by the Department of Energy, the American Nuclear Society, the Universities themselves and the Nuclear Energy Institute, nuclear engineering enrollments have doubled.

The nation needs a political will to address its energy future. The current renaissance of nuclear education is due to the strong support by the office of Nuclear Energy at the Department of Energy. A new system of nuclear education and research in the United States is not needed. The current system is good; but it needs continuing

incentive and rejuvenation. The domestic rebuilding of nuclear education is an issue of ensuring the high quality of the student populations, maintaining the university research infrastructure, and replacing an aging faculty. More is being and should be done to link industry and the national laboratories with the universities and to link American universities with the international nuclear sector.

Nuclear technology collaborations between the United States and Japan are important for meeting the global economic, environmental and security challenges that we both face in the coming decades. R&D efforts with international cooperation will be essential for success. Together, the United States and Japan can share resources to ensure the development and deployment of the next generation of advanced nuclear energy systems that will be even safer and more proliferation-resistant than today's models.

Importance of Ethical Education for Engineers and their Responsibilities

Kazuko Miyamoto
Director
Consumer Research Institute
Nippon Association of Consumer Specialists, Japan

Even if technically secure the maximum safety, you can't give the society the fullest sense of security. Then,how can we feel secure in our society? Trust is the key word, especially from the point view of technology. Mahatma Gandhi once picked up seven elements that would destroy us, out of which I refer to three; knowledge without character , science without humanity and business without ethics. What is now wanted for technical experts here in Japan are character, humanity and ethics, I believe. If I'm allowed to add one more, it' ll be accountability. Not with experts' words, not with their agreement, nor for their own development, but just their accountability understandable to citizens and consumers. They have to be fully understood and agreed upon by citizens and consumers, the process of which is the basic rule of today's society. Business ethics is the accumulation of personal ethical actions. What's more, accountability calls to account for personal responsibility. Thus each one of technicians has more and more responsibility as an expert.

Now the words like compliance, business ethics, corporate governance or CSR are everywhere. I understand this shows the tendency that business as well as government are tackling with cleaning up their systems. This is the world-wide phenomenon. However, how do the ordinary citizens understand this ? A questionnaire shows the following. "Concepts of corporate social responsibility and business ethics are too abstract and hard to understand—52.3%" "Expectation rates : Don't expect much – 44.7% : expect greatly plus expect a little —48.3%" In other words, citizens are very much interested in business ethics and corporate social responsibility, but rather at a loss how to evaluate their effectiveness.

Ethics or social responsibility can restraint human behavior and be harmful to some interests in the short run, but, in the long run, it is never contradictory. If you are offered a choice between regulation by law like market control and self-reliant action norms, the answer is obvious. In order to attain a long term objective, you have to put an emphasis on training employees like technical experts.

Present Status and Perspective of Nuclear Engineering Education in Tokyo Institute of Technology

Masayuki Igashira
Associate Professor
Research Laboratory for Nuclear Reactors
Tokyo Institute of Technology, Japan

The nuclear engineering education in Tokyo Institute of Technology (Tokyo Tech.) started with the establishment of Department of Nuclear Engineering in its graduate school in 1957. Tokyo Tech. has no course related to nuclear engineering in its schools. The name of department has not changed from the beginning and will not change at least for 6 years. The department belongs to the Graduate School of Science and Technology but is operated by Research Laboratory for Nuclear Reactors.

At the beginning, all students aimed at the nuclear engineering in the narrow sense and the curriculum responded to their demands. At the moment, however, a curriculum covering the nuclear engineering in the wide sense is provided, taking account of the bad condition of employment in nuclear industries and the various directivities of students. Namely, the present curriculum is composed of fission- and fusion-reactor engineering, quantum- and particle-beam engineering, and environment and energy engineering.

"Yutori Kyo-iku (education free of pressure)" and "Rika Banare (moving away from the science)" cause a remarkable decline in the students' scholastic performance and creative power. On the other hand, the guarantee of quality is required nowadays for the products, *i.e.* the students who finished their course. Therefore, the exit control of students is necessary through providing an appropriate curriculum, teaching effectively, and evaluating students' understanding appropriately. Of course students are hoped for their great growth in a free atmosphere. An appropriate entrance examination is also necessary for gathering good students.

A proposal of the Department of Nuclear Engineering of Tokyo Tech. has been approved as one of the 21st century Center of Excellent (COE) programs. This proposal is only one in the nuclear engineering field in the COE programs. The keywords in the education part in the COE programs are "doctor" and "international". On the other hand, two fundamental chairs by visiting professors are approved. Moreover, the department has operated an international course for 10 years. Therefore, the department of Tokyo Tech. must become a COE in nuclear engineering education in Japan and the world.

Considering the international standardization of graduate education as well as the

situations described above, we are now discussing the essential reformation of education system in the department. A tentative plan will be shown in this presentation. We hope that the new system will start from the April of 2005.

Mitsuru Uesaka
Professor of Graduate School
The University of Tokyo, Japan

In order to educate and bring up established nuclear engineers who can be responsible for nuclear facilities, University of Tokyo is reforming the two existing organizations on nuclear science and engineering and constructing Nuclear Professional/International Schools in 2005(FYS). This is done under strong collaboration with Department of Quantum Engineering and System Science of U.Tokyo, JAERI and JNCDI. Nuclear Engineering Research Laboratory in Tokai and Research Center for Nuclear Science and Technology in Asano are reformed to Nuclear Professional School and Nuclear International School, respectively. In the former, the professional master degree (nuclear) is issued in the nuclear professional course by only schooling by courses and practices of high quality for one year. On the other hand, advanced education and research, including new nuclear social engineering, are performed in the nuclear innovation course and international engineer course in the Nuclear International School. Especially, the nuclear international security is educated in the latter course aiming to bring up future Japanese executive officers of IAEA. The two schools are connected via the internet course system. We have several visiting professors from JAERI, JNCDI, certain institutes, ministries and companies to enforce the professional education. Of course, we surely continue and enforce the research activities using the experimental reactor "YAYOI" and electron linacs, lasers and ion accelerators and operate those as the users' facilities. Such professional school- and research-complex on nuclear science and engineering will start in University of Tokyo next April.

Training of Engineers and Securing Technical Basis of Nuclear Industries in Japan

Toshiro Kitamura
Senior General Manager
The Japan Atomic Power Company, Japan

1. Current issues

Today's major subject of nuclear power industries in Japan is being shifted to the field of "maintenance." Although some new technical fields such as reprocessing, radioactive-waste disposal and reactor decommissioning are coming into business, the number of the jobs offered to the engineers graduating in nuclear engineering will remain at the current low level. Human resources well trained and disciplined in nuclear engineering with high capabilities are and will be needed in the years ahead.
In many universities, however, the field of the nuclear technology education is being diversified with less deep expertise, as occasionally indicated by the renaming of nuclear engineering departments to others. Industries need such knowledgeable human resources with creative thinking and practical experience, not in the virtual sense.

Operation and maintenance work of nuclear power stations has been significantly borne and supported by the local technical high school graduates in the district of the nuclear power station's site. Many employees, who undertake the maintenance work of nuclear power stations (NPSs) as contractors, come from the local technical high schools, too. Reduced birthrates increase the ratio of children for higher education at universities, lesser number of students are interested in scientific careers, these are the two major elements of lesser number of high school graduates starting professional careers with adequate technical knowledge.

The points of issues are:

i) How we can maintain the quality of technical expertise by succeeding techniques and technologies from skilled technicians to younger generations;
ii) How we can secure the quantity of skilled nuclear workforce by stimulating their interest in nuclear power; and
iii) How we can optimize the compatibility between economics and reliability of nuclear power in view of human resources availability.

2. Policy for future

i) For the successful succession of necessary techniques and technologies from

skilled technicians to younger generation, hand manuals are not sufficient. Continued and *well planned "On-the-Job-Training"* is strongly needed. The multi-layered structure of contractors hinders effective accumulation of education and training of the workers because too many workers are to be involved in efficient education and training, and many of them often migrate over Japan to get jobs throughout the year. This reality stimulates the utilities or the main contractors to undertake the work by themselves (the so-called "In-House-Maintenance") by simplifying the multi-layered structure of contractors for the purpose of securing the level of key technologies and techniques.

ii) Public acceptance of nuclear power is equally important to motivate the young generations to the arena of nuclear industries. *Tri-sectored cooperation by Industries, government administration and academic organizations* should strongly promote the science and nuclear education. Industrial and research organizations send more instructors to universities, and on the contrary they increase the number of students to accept as actual trainees for practical experience. Important is to secure a necessary number of workforce for nuclear maintenance and train them well to get *qualified with multi-skilled techniques* as well as *rationalize the working rules* as appropriate to them. In an era of the decreasing birth rate and aging ahead in Japan, it is very important to simplify the multi-layered structure of contractors and secure the necessary human resources for nuclear maintenance.

iii) JAPC (The Japan Atomic Power Company) is now shifting its maintenance work style from the conventional "Multi-Layered Contractors System" to an advanced "In-House-Maintenance System. We are challenging to improve economics and reliabilities of NPSs through this new maintenance style including the reduction of intermediate managerial personnel for simplification. It means that we stock some pieces of equipment by ourselves for our NPS. *Alliance among NPSs, establishing a standardized qualification system and deregulation for flattening the maintenance workload over the year* are, among others, important elements to expand and implement the "In-House-Maintenance" successfully. In line with the proposal of "The Human Resources Subcommittee" of JAIF, JAPC is taking an initiative to found the *Nuclear Education System Network (NES-net) on the Internet web-site for the alliance of education* by sharing training infrastructures, training facilities, education programs and instructors between the industrial, research and academic organizations.

Italic: Proposed items by "The Human Resources Subcommittee" of JAIF

Human Resource Development Activities of the Atomic Energy Society of Japan (Recent Activities of the "Special Expert Committee for Atomic Education and Research")

Kazuhiko Kudo
Professor of Graduate School
Faculty of Engineering
Kyushu University, Japan

The "Special Expert Committee for Atomic Education and Research", which was set up by the Atomic Energy Society of Japan in 1974, pursues investigations and researches on nuclear education in universities and industry, studies for elementary and secondary education and activities designed to promote better understanding about atomic energy by the general public. This paper describes various activities of the committee focused on the development of human resources in the field of atomic energy and its approaches to society.

1. Creation of the Professional Engineer (Atomic Energy and Radiation) Qualification

The title of professional engineer is a national qualification accredited by the Ministry of Education, Culture, Sports, Science and Technology and covers over twenty technical disciplines including machinery, electrics and electronics, chemistry and construction. The Council for Science and Technology which had previously submitted a review of the Professional Engineer System presented its recommendation entitled "About the Revision of Technical Fields covered by the Qualification Tests of Professional Engineers" to the Minister of Education, Culture, Sports, Science and Technology and the ministry revised the regulations and notices related to the Professional Engineer System after the procedures of public comments (published in the Official Gazette dated August 18, 2003).

In November 2001, the Atomic Energy Society of Japan made a formal request to the Minister of Education, Culture, Sports, Science and Technology that the atomic energy sector should be included in the review process of Professional Engineer qualifications under the name of the then-President Kenji Sumida. The request was accepted and the nuclear field was introduced in the revised Professional Engineer Qualification System; the qualification test for the "Atomic Energy and Radiation" sector will start in FY 2004.

2. "Continuing Professional Development" of Engineers in the Nuclear Field

The Japan Federation of Engineering Societies has established and started the

activities of the Committee of the Council for PDE (Professional Development of Engineers) with the objective of fostering engineers after graduation from college. The committee is expected to build a common framework to member societies (certification of education history, management of records and others), exchange information on their continuing professional development and develop a curriculum that is common to engineers and also promote continuing development for them.

The Atomic Energy Society of Japan not only has a seat on the committee, but in addition, also set up a CPD (Continuing Professional Development) working group to begin activities. The working group consists of professors of universities and representatives from the Japan Atomic Industrial Forum, the Japan Electrical Manufacturers' Association, research institutes such as the Japan Atomic Energy Research Institute and the Japan Nuclear Cycle Development Institute, utilities and vendors.

Its activities include (1) investigations into the continuing professional development in the field of atomic energy and review of potential contribution to society, (2) investigations into and review of potential needs of a new qualification system, (3) study of a system to promote continuing professional development, (4) study of a mechanism to exchange information and work with other member societies, (5) study of a mechanism for continuing professional development of licensees of national administrative qualifications (licensed engineer of reactor, licensed engineer of radiation, licensed engineer of nuclear fuel) and (6) support of (creation of) Professional Engineer of Atomic Energy. At present, a number of these are already under way.

3. Status of Nuclear Education in Universities and Graduate Schools

There are increasingly fewer departments in universities, especially on the undergraduate level, that uses the word of "Nuclear" in their names. It is the organizational reform in the universities resulting from the introduction of a broader division of departments in the establishment standard of universities in 1991 that triggered such a trend. Many universities have changed their conventional, vertically organized departments and graduate schools and grouped these fractionized departments of the faculty of engineering into several divisions or lines. The conventional departments related to atomic energy have often been inherited as a course along such lines or as a part of a division that comprises former departments. At that point, the term "Atomic Energy" was dropped not only from the division name but also from that of the course; instead, many use such keywords as "Energy", "Quantum", "System" and "Science".

On the other hand, many major courses have also changed their names in graduate schools. Compared with colleges, there are more major courses that have not changed

their names and fewer courses have been merged with other courses. Consequently, their education programs have not been changed as drastically as those of colleges, but it cannot be denied that the research and education systems directly related to nuclear power generation have been diluted since the latest trend is a comprehension of nuclear engineering as a broader discipline that comprises quantum and beam science, system engineering, applications of radiation, nuclear fusion and simulations.

In this way, the education and research that are directly related to nuclear power generation have declined in universities. However, there is a change in the overall engineering education in which students mainly work on basic engineering studies in colleges and special subjects in graduate schools, which partly enhances the flexibility of students and employers in finding and offering jobs and careers. There is also a change in the needs of university education for the industry. The results of the questionnaire survey conducted by the Japan Atomic Industrial Forum shows that the industry requires graduates who are employed in the nuclear sector to develop a basic scholastic ability, including a broad range of education other than nuclear subjects, flexible ideas, logical thinking faculty, a spirit of challenge and problem solving ability.

4. Publication of Revised Side Reader "Genshiryoku ga Hiraku Seiki (A Century Opened-up by Atomic Energy)"

The Atomic Energy Society of Japan published the first edition of the booklet in October 1998 and issued a revised edition in March to update data and diagrams and add latest developments including the recent accidents and the social circumstances.

Responsibility of New Institute for Nuclear Energy Research & Development

Shunichi Tanaka
Vice President
Japan Atomic Energy Research Institute, Japan

Great concern of nuclear energy community of Japan is shortage of human resource and decline of technology background in future, for decreasing students who intend to be a nuclear scientist and engineer, difficulty of keeping nuclear facilities for research and education in the universities, and fading away of nuclear energy education course in the universities.

Considering the concern, in the MEXT report for the unification of JAERI and JNC, it was stressed that the new institute have to be dedicated to training & education of personnel in the nuclear field with basic and comprehensive Research & Development(R & D).

Human resource qualified is a life line and the greatest concern in the research institute, therefore, the best effort will be done to keep high performance of institute. Besides, the MEXT report has addressed such a mission that the new institute contributes much more for human resource to support sustainable nuclear energy application.

The background of R & D for nuclear energy is kept with qualified talents and good condition as the talent bring up. In this context, real understanding of the surrounding condition around nuclear society and effective contribution at respective situation are essential to make nuclear engineering education and technology base confirmed for nuclear energy application.

Responsibility of the new institute, being a unique nuclear energy research institute of Japan, is to promote advanced R & D for developing innovative nuclear energy application, with which to make a condition so as a lot of students with higher potential are willing to join the nuclear energy community. Challenging R & D is able to do the best support of nuclear energy application, and consequently contribute to the nuclear engineering education. I would like to introduce the present status and the future plan at the JAERI and the new institute concerning human resource and technology background on nuclear energy.

In the panel, I would like to expect valuable suggestion how to use of the research facilities and activities of the new institute for developing human resource and nuclear energy applications in Japan and Asian countries.

On Nuclear Technology Education and Municipality

Tatsuya Murakami
Mayor of Tokai village, Japan

In The 4th Master Plan(2001－2010) of Tokai Village, where the first atomic light in Japan was lit in 1956,we declared our policy to establish a research center of nuclear science, high technology and culture. In Tokai Village Japan Proton Accelerator Research Complex (J-PARC) is now under construction in the site of Japan Atomic Energy Research Institute (JAERI) site and JAERI and the Japan Nuclear Cycle Development Institute (JNC) are to be unified to establish a new agency as a unique core institute of comprehensive nuclear R&D in Japan in a few years. Tokai Village is definitely expected to be the COE in the field of nuclear science and technology in Japan and the World.
Our specific aims are:

1. to develop basic infrastructures of research, education and living for those who will come and live or stay in Tokai Village from all over the World as well as Japan;
2. to develop a cyclic system of "basic research → applied study → incubation → industrialization → basic research ";
3. to develop a nurturing system of human resources to maintain the system above;
4. to establish an international comprehensive center of education and R&D for science, technology and liberal arts.

As it is of course beyond our ability to fulfill those aims for ourselves, we asked neighboring universities, institutes, companies etc. for cooperation in August,2003 and are now working together to build a consortium (to be called Tokai Science Village),where many postgraduate research institutes and laboratories of all kinds from all over the world will assemble for collaborative research and education.

Fostering of Nuclear Experts and Strengthen the Basis for Nuclear R&D

Itaru Watanabe
Director of Atomic Energy Division
Research and Development Bureau
Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan

Nuclear R&D supports the present and the future of nuclear power generation, which are already one of the important basic energy resources in Japan. Nuclear R&D is also the basis of basic and fundamental researches which have various unknown possibilities. From the recognition that the basis of the nuclear R&D is supported by the sufficient human resources, the fostering of nuclear experts who contribute the nuclear R&D is very important. From the present financial situation, universities are in difficulties in maintaining nuclear R&D facilities and capabilities for fostering nuclear experts. Taking the chance of integration of Japan Atomic Energy Research Institute (JAERI) and Japan Nuclear Cycle Development Institute (JNC), the new organization is expected to play a role in fostering nuclear experts and maintaining the nuclear R&D basis. This is mentioned in the report for the integration of two nuclear Institutes issued last September. Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the two Institutes are now preparing the integration of two Institutes and establishing new organization, establishment of which is scheduled in FY2005.

On the other hand, MEXT started the Innovative Nuclear R&D Program from FY2002. This program is designed to promote fostering nuclear experts and strengthen the nuclear R&D basis by cooperating among the public research organizations, universities and private sectors.

MEXT is now promoting fostering nuclear experts and strengthen the nuclear R&D basis through these programs.

[MEMO]

[MEMO]

Friday, April 23

Session 4

"How We Best Carry Out Fuel Cycle Back-End Projects amid Market Liberalization"

9:30-12:30

Chairperson

Hiroyuki Torii, Professor, Tokyo Institute of Technology, Japan

Recycling uranium resources is another pile in the foundation of nuclear use; completing the fuel cycle is at the core of Japan's nuclear policy and has been pursued steadily since the program's inception.

With liberalization of power markets progressing in phases since 1995, efforts to improve efficiency have been urged. As has been pointed out, however, this, in a competitive environment, encourages the pursuit of short-term profits, short-term decision-making. The issue is how to provide mechanisms which can make that compatible with projects that should be carried out on a long-term basis such as back-end projects.

This session will focus on carrying out back-end projects in the midst of on-going liberalization. Included will be the Rokkasho reprocessing facility, now at the testing stage and approaching the start of full operation, and other on-going projects. In the keynote speeches, two issues will be highlighted: changes in utility management as a result of liberalization, and the significance of back-end projects to nuclear energy development. Discussions will address what the private sector should do in order to carry out the projects steadily, taking into account factors that cannot be judged according to market principles – energy security, environmental issues, and relationships with local communities. Role-sharing between the public and private sectors will be considered as well, to discuss how the back-end projects should be carried out combined with the liberalization.

A Market View of Electric Power Deregulation

Masanori Maruo
Director
Japan Equity Research, Tokyo Branch
Deutsche Securities, Ltd.

Will deregulation change the way electric power companies are run?

Put simply, we can look for a change in how balance sheets are evaluated, mainly because the total cost approach will disappear. With the total cost approach guaranteeing the return of investment, companies were required to provide steady electricity supply. They accordingly focused first on putting in place assets to secure stable supply, and only thereafter on securing requisite funding. As the rate system secured return of investment, companies faced no difficulties in fundraising and did not regard financial stability as an issue. However, conditions are set to change because deregulation of rates for just over 60% of total demand will remove the returns guaranteed by the total cost approach. Put simply, electric power companies will have to provide stable supply, improve competitiveness, and invest for growth, all on limited funds. Under the previous approach, we could simply focus on the asset side of the balance sheet. Going forward, we will need to take a good look at the debt and equity sides as well. This is, of course, the standard approach for companies in other sectors.

A capital market view of the key points of earlier rounds of deregulation

The two previous rounds of deregulation centered on a notification system for rate reductions, followed by deregulation for large-lot users. Notification of rate reductions was important because it increased management leeway. In other words, it tested management competence for the first time. As the rate reductions of the late 1980s under a strong yen regime indicate, the total cost approach offered companies little room to generate surplus profits. However, such profits became possible after the system was changed. Under the earlier circumstances, management had little room to display its skills because it had nothing left after paying the requisite expenses. Post-deregulation, however, individual management capabilities are likely to result in clear differences among the electric power companies. How the markets evaluate the companies will depend very much on the extent to which they can secure resources via cost cuts, and on how effectively management uses the resources. Again, this is a matter of course for companies in other sectors.

As we mentioned earlier, deregulation for large-lot users is important because it removes the return of investment guarantee. We think management capacity to respond to this risk will become a key criterion in assessing the electric power companies.

The key points of the third round of deregulation from a capital market perspective

Of the many proposed systemic changes, two are important from a capital market perspective.

The first is the possibility of intense competition among the power companies as the pancake structure is adjusted. Stiffer competition may accelerate rate cuts, raising concerns about a decline in earning power. This is clear negative, and we are looking closely at the details of systemic design that are likely to regulate sector competition.

The second key point is nuclear power. The major concern is the degree to which economic support can hedge the risk inherent in owning and operating a nuclear power plant, or, put differently, how much nuclear power risk electric power shareholders are prepared to carry. We will thus be watching the division of roles between the public and private sectors, as well as the content of economic support. We are particularly concerned about measures to be implemented if the ¥18.8trn assumption for back-end costs calculated by the subcommittee proves untenable. We think the capital markets will be forced to adopt a tough view of the electric power companies if economic support and the division of roles between the public and private sectors are not clarified in cases including: 1) start-up of nuclear fuel reprocessing plants is delayed significantly owing to technical problems and public opposition, 2) companies are unable to operate at standard capacity, 3) the international situation changes, and 4) deregulation progresses further.

Back-end Projects in the Japanese Nuclear Industry: What Should be Done Now

Keiji Kanda
Professor Emeritus, Kyoto University
Director, Japan Energy Policy Institute, Japan

1. Introduction

The Basic Plan for Energy Supply and Demand defines back-end as follows: "Back-end refers to the reprocessing of spent fuel from nuclear power plants, and the treatment and disposal, etc., of waste generated in the steps of further processing the recovered plutonium and other materials." According to national policy, spent fuel is in principle reprocessed; direct disposal after once-through is not accepted. Today, however, we would like to discuss the entirety of back-end projects, which includes interim storage. We will also address the transporting of spent fuel, plutonium and high-level radioactive waste

2. Reprocessing Projects

France, England, Russia and India currently have full-scale reprocessing projects for peaceful purposes. In Japan, although a reprocessing project has been carried out on a small scale by the Japan Nuclear Cycle Development Institute, the Rokkasho reprocessing facility now under construction will be the first large scale project. Although the construction schedule has seen many delays, a series of tests using uranium appears set to start soon.

Rokkasho will be the key facility for Japan's completion of the nuclear fuel cycle. There are some who oppose it because costs have become greater than were expected. Given Japan's energy security needs, however, I don't think the cost is too much of a burden for the nation. Rather, what should be considering most in operating the facility is winning understanding of the project from nuclear non-proliferation groups in the United States and Southeast Asian countries, in addition, of course, to the Japanese people and especially local residents.

3. Spent Fuel Interim Storage Project

Spent fuel interim storage is important to energy security. Spent fuel will be a valuable resource 50 years from now. I visited Yucca Mountain in the United States, Olkiluoto in Finland, and Oskarshamn in Sweden, and found them to be virtual spent fuel storage facilities, rather than the deep underground disposal facilities they are nominally designated. If alternative energies are developed in the future and nuclear power

becomes no longer needed, each can be used as a final repository, but they are designed so that spent fuel can be recovered if desired. Even France is engaged in studies on recovering spent fuel not yet reprocessed at a part of the Deep Underground Laboratory in Oskarshamn, Sweden.

With the volumes of spent fuel in Japan that have been accumulated already and will continue to be generated, the reprocessing facility at Rokkasho will be able to handle at best half of it; the rest will be held in interim storage. Although that approach may be somewhat different from the ones taken in other countries, it is better in Japan that only high-level radioactive waste generated through reprocessing be disposed of, and the half of the spent fuel not reprocessed be put into interim storage sites. There may also be no need to stick to the notion that the period of interim storage is 50 years. In France,100 to 300 years has been proposed for long-term interim storage.

4. Transport Projects

Now that there is a widespread feeling that terrorist attacks are increasing around the globe, the international transport of radioactive materials has come to the forefront of awareness in already severe circumstances. The industry has so far been able to handle anti-nuclear protests and the like by itself; now, however, it must also be ready to confront terrorism and even sabotage. Issues of liability are becoming particularly complicated. In transporting plutonium, just as an example, the industry must now consider compensation for intentional explosions, in addition to accidents affecting countries off whose coasts a vessel passes.

5. Conclusion

What should be done now? Japan is vulnerable in its energy security for the following reasons: (1) It lacks natural energy resources. (2) It is a nation of islands, not contiguous with its neighbors, which impedes the direct supply of electricity, gas or oil. (3) It cannot use military force. Instead of thinking, "What should be done now?" we should be thinking, "What can we do now?" . . . and try all that we can.

Utilities' View on the Nuclear Power Generation and the Fuel Cycle Back-end in the Liberalized Market

Makoto Satake
Director and Deputy Executive General Manager
Nuclear Power Division
Tokyo Electric Power Company, Japan

Since Japan is short of natural resources within the country, it is an important national energy policy to domestically reprocess spent nuclear fuel and to recycle plutonium into the power reactors in order to keep national energy security and to suppress greenhouse gas emission. According to this policy, Japanese utilities are constructing a commercial reprocessing plant in the village of Rokkasho, Aomori and are expecting the start of commercial operation scheduled in 2006.

However, the fuel cycle back-end business including reprocessing and final disposal of radioactive wastes is very different from other ordinary businesses because of such unique characteristics that it needs a huge investment to start and decades of time period to complete, and has to wait for the considerable delay from the consumption of electricity generated by the nuclear fuel to the payment for the cost at the completion of the back-end, and finally that it has to prepare for the large uncertainty in the long future. Federation of Electric Power Companies (FEPC) estimated the total cost as 18.8 trillion yen (without discount) for 40-year-operation of Rokkasho Reprocessing Plant and the associated fuel cycle back-end businesses. About one third of the estimated cost is related to the spent fuels that have already been discharged from the reactor cores. Part of the money to compensate this future cost for the spent fuels already out of the reactor cores has not been collected from the customers of the utilities because that has not been allowed by the current regulation on the electricity rate.

Therefore an appropriate measure to correct the current situation is essential in order to maintain the fuel cycle back-end businesses and to be fair to the nuclear power generation in the liberalized market. A legal framework has to be established so that the utilities are allowed to charge the current customers for the future cost resulting from using nuclear power generation, to keep the collected money safely and transparently, and to use it flexibly in any unforeseeable condition related to the nuclear fuel cycle system.

As for the stranded cost that is associated with the spent fuels already out of the reactor cores and has not been charged to the customers due to the current regulation, the only way to collect the money is to include it in the electricity rate charged to the future customers. If it were charged only to the customers of the utilities that operate nuclear power reactors and the customers of the third party suppliers escaped the charge, this

would be seriously unfair since all of the former customers used more or less the nuclear power before the market is liberalized. It should be collected widely.

As the result of the FEPC's study that estimates the power generating cost including the fuel cycle back-end, the nuclear power is shown to be well competitive with other power sources as long as it is stably operated for the base load. Under the legal framework mentioned above, Japanese utilities would like to continue to promote the nuclear power and fuel cycle businesses in the liberalized market and to contribute to the Japanese energy policy of recycling plutonium.

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

With the right hand extended in friendship, the left throws a punch.

This is my impression of the relationship between liberalized power markets (competition) and back-end projects (collaboration, coordination). In the village of Rokkasho, where an unfavorable social wind blows from a series of construction faults, utmost efforts are being made – mainly by employees sent from the electric utility companies – to complete the nation's first nuclear fuel cycle facility.

It is, however, difficult to see what lies ahead in this nuclear fuel cycle project, in part because, as the title suggests, how the back-end projects should be carried out as a whole is not clear.

The morning edition of the *To-o Nippo* newspaper on March 27, 2002, carried a headline: "TEPCO Fails in Bidding to Supply Sendai, Outside its Service Area, But Process Drives Down Prices." Under a system of partial liberalization of the electric power retail market introduced in March 2000, Tokyo Electric Power Co. (TEPCO) had attempted to enter the market outside of its original service area for the first time.

There is nothing to criticize in TEPCO's act itself, because it was in accordance with a policy change of the government. But there were many serious problems behind it. Looking only from the front, Tohoku Electric Power, the winner, was forced to lower its price and to then drastically cut its own costs. Shaking hands while locked in battle requires some painful and distorted postures. If liberalization is pursued to the fullest, the prize for the companies will be survival itself.

Which will affect back-end projects, including fuel cycle projects, whose purpose is collaboration and cooperation.

The ten utility companies include the strong and the weak. With such players in the same arena, competing against each other, "liberalization" means survival of the fittest.

"It goes without saying that liberalization benefits consumers." At least it is common to think like this. But from what I have seen since the "Sendai War," I don't think we can be so sure. Competition is necessary, as well as collaboration, but in order to achieve it and its benefits, further difficulties must still be overcome.

I wonder if the industry, the government and consumers each have the fortitude and wisdom to get through it. The nation seems neither to know about this, nor to be informed well enough.

Kenji Yamaji
Professor of Graduate School
The University of Tokyo, Japan

Changes since 1967 Long-term Nuclear Plan

- Shrinkage of assumed nuclear power capacity
  (More than 100GWe nuclear power in 2000 was anticipated)
- Significant increase in assumed costs for reprocessing and MOX fuel fabrication
  (Cost of reprocessing was assumed to be offset by the credits of recovered U and Pu)
- Suspension of breeder rector programs in US, UK, Germany, and France
- Increase in the number of nuclear weapon countries
- Emergence of global warming issues as a real policy target
- Liberalization of power market
  (from cost based tariff to competitive pricing)

Challenges for the Rokkasho Reprocessing Plant

- Economic value of Pu is negative (no definite plan to use recovered U)
- Reprocessing is not an economically reasonable recycle system of nuclear resources
- Function of reprocessing is the same as that of spent fuel storage; storage is a cheaper option
- There are huge costs which were not collected in reserve, such as decommissioning cost
- Electric utilities are afraid of stopping reactor operations due to the accumulation of spent fuels at reactor sites in case that they halt the Rokkasho project.

Reappraisal of the Role of Nuclear Fuel Cycle

- Full scale Pu utilization makes nuclear almost unlimited energy source; but, there are other options available
- Uranium resources are enough at least by 2050; LWR realizes the benefits of nuclear power
- Restructuring long-range R&D strategy is required with a focus on innovative technologies for reprocessing and breeders

What should be done for the Future

- The obsession "establishment of nuclear fuel cycle = reprocessing the all spent fuels" should be modified
- Change the course: from reprocessing to spent fuel storage
- Keep an option for spent fuel disposal
- Public sector should support the back-end part after the storage of spent fuels

Jean-Jacques Gautrot
Senior Vice President
International & Marketing
AREVA, France

Reprocessing and recycling is today a mature industry. It provides a proven solution to spent fuel management, allowing use of the energy remaining in the fuel and delivering sorted and conditioned ultimate wastes safely stored waiting for the opening of a geological repository.

AREVA has been committed to developing this technology to an industrial scale and to operate it safely and efficiently. As of today, AREVA operates the La Hague plant and reprocessed more than 20,000 t of LWR fuel.

AREVA commitment is also towards sustainable development and the concept of continuous improvement. La Hague is no exception: operations have been constantly improved, and efficiency and productivity gains have been achieved thanks to careful review of experience. In addition further innovations have been implemented, especially in waste management: the current volume of conditioned waste per ton of spent fuel has decreased from the design value of 3 m3/t to less than 0.5 m3/t and they are all conditioned in the same universal canister.

AREVA is proud to have transferred its technology to JNFL's Rokkasho-mura plant. The Technology Transfer agreement has from the beginning included a feed back of experience; since then the long lasting and trustful relationship has further developed between JNFL and AREVA and we are happy to further cooperate and support our Japanese colleagues.

[MEMO]

Friday, April 23

Session 5

"Civil Society and Nuclear Energy"

Part I: NPO/NGO Forum

"These are our Initiatives for Changing Environmental, Energy, and Nuclear Policies."

13:30-15:30

Coordinator

Yojiro Ikawa, Editorial Writer, The Yomiuri Shimbun, Japan

As society becomes more diverse and issues more complicated, we see an increasing tendency for individuals and groups to put forward their own policy proposals, at their own initiative, from their own particular points of view. On national policy-making, the number of NPOs/NGOs speaking out on behalf of citizens has increased.

In this session, representatives of NPOs/NGOs – organizations that routinely gather information on policies on energy, nuclear energy and the environment, develop positions and disseminate their thoughts – will introduce their own activities and discuss their views on issues of energy, nuclear use and the environment, augmented by comments from specialists. It will be an opportunity for them to speak out and affect policies and measures to be determined hereafter.

Even more specifically, in regard to decision-making on nuclear-related policies, relationships between the government and nuclear siting areas, and information disclosure, they will be invited to point out problems and propose policies from their points of view, and to discuss related measures.

To Improve the Climate that Surrounds Nuclear Energy - New Challenges of IOJ

Chiaki Aono
Steering Committee Member
Innovation of Japan

Intent and Objective of Incorporation

The objective of the organization is to act to contribute to a better future for Japan as its name implies. As an approach to this end, IOJ places an emphasis on the issues of energy that are especially serious and involve time constraints. Its membership includes a variety of people: specialists engaged in R&D in universities and research institutes, veterans who wish to pass on their knowledge and experiences, business people, educators and college students. There are also people who hope for the development of their communities and who are concerned about the future of the country. Members have joined IOJ with a hope to realize their thoughts to make a better society by means of their number and form.

Energy Education

Right energy education is indispensable to make it possible for many people to share a comprehensive and appropriate decision on nuclear energy that attracts a great deal of attention for good or ill. IOJ has started to hold workshops ("IOJ Chikyuu Club" - IOJ Intellectual Curiosity Club) (free of charge) for students of junior high schools, high schools and colleges with the support of the outstanding expertise and experiences of volunteer members.

The following courses have been held so far:

- Nuclear fusion - a future energy
- Aspects of high-temperature superconductivity
- Electricity is produced like this. For environmental issues,
- Development that does not destroy Nature
- What is global warming?
- Crisis of wildlife and us. These courses received favorable comments. It is planned to extend the project in terms of regions and number of times as a series of programs.

Proposal of Policies

If the energy education is a long haul focusing on the future, a proposal of policy is a timely operation to act at the right time. There are issues that can only be commented by experts such as incidents at NPPs, Pu-thermal plans and reprocessing, but general public

also has something to say. If an independent and neutral NPO comes into the conventional framework of policy settings composed of the government, electric utilities, host municipalities and local residents, it will be possible for each of us to take interest in and bear the responsibility for securing the lifeline. It is the wish of the organization to contribute to stirring up public opinion through outgoing communications as well as to deepen the debate among its 1,600 members (as of March).

"Middle term" between who knows and who doesn't

I don't know exactly what it is, but it looks terrible — humans have got over such a sense of fear of something unknown in the history. The distortion has become aggravated in the case of nuclear energy since the level at which it is surmounted varies greatly from person to person. What is really terrible? What should be done? Who acts as a link between who knows and who doesn't? If good answers are not found, a new form of organization may do it well. To understand, to discuss and to propose. Changing the climate from an emotional, either-or discussion that only seeks for a simplistic answer of for or against to a scientific, rational discussion, we believe that is exactly the direction IOJ should take.

Communications between Electricity Production and Consuming Areas

Etsuko Akiba
President, ASCA Energy Forum, Japan

<Activities of ASCA Energy Forum>

ASCA Energy Forum was originally founded in 2001 as a group of advisory specialists for consumers' affairs who were strongly interested in energy issues. It held seven meetings called "Energy Talk Salon" in Fukushima, Kashiwazaki, Aomori and other cities, where nuclear related facilities are located, to provide a place where citizens living in electricity production area and in consuming area could talk frankly about power generation problems with each other. These experiences made us realize the vital importance of communication.

We have realized that advisory specialists for consumers' affairs, acting as a link between consumers and enterprises/administrative agencies, should also play a role of mediator in communication on energy issues. We, aiming at making our organization an accredited NPO under the NPO Law to reinforce its activities, applied to the Tokyo Metropolitan Government. It was certified as such in November 2003.

It is our hope to call on consumer groups interested in energy issues across the country in the near future to join us and enlarge the citizens' network for energy.

<Lessons learned from the exchange meetings>

Consumers living in the consuming areas who have little interest in energy are apt to raise questions about energy, while consumers in the producing areas who have a great deal of interest and knowledge reply to them. That was common in all the meetings. At almost every exchange meeting, citizens living in the production areas say, "We hope the people living in the consuming areas will learn to care more about energy." On the other hand, the people from the consuming area reflect on their lack of interest in it and become more aware of the importance of using electricity with care.

- The words of citizens of the same level are persuasive.
- It is important for the consumers to learn from their mutual exchange meeting.
- It is necessary to arouse strong interest in and also enlighten the consumers within the energy consuming areas.
- It is significant to make proposals and suggestions based on the outcome of the discussions to the government and utilities.

<Importance of consumers' information sending>

It is necessary for us, consumers of energy, to take stronger interest in energy issues, gather related information in an active manner and understand them correctly, not to leave them in the hands of specialists and experts. It is also essential for us to take part in policy-making positively and voice our opinions. To this end, the government and electric utilities is required to provide the people with detailed information on energy issues easy to understand for them through interactive communication and it is important to provide a place where everyone can speak out on the energy issues freely.

Seeking for a Nuclear Policymaking Process Open to the Public

Akifumi Ueda
Representative
Citizen's Science Initiative Japan

My organization, "Citizen's Science Initiative," is conducting research and investigation with the primary role by ordinary citizens in six fields of interest: life manipulation, space development, electromagnetic waves, nanotechnology, food and radiation exposure. Its aim is to clarify 1) how the citizens can reflect their opinions in the appropriate control process of policymaking and research & development in the science and technology arena, 2) how objectively they can judge the negative aspects and risks of technologies and reduce them and 3) with what specific reforms of the society they should begin towards a target society.

If we look at the energy environment in Japan, Japan's nuclear policy has a number of problems unsolved including the surplus plutonium management, the final disposal of high-level radioactive wastes and cost-intensive structure of electric utilities pressing their business management. In addition, a series of recent nuclear scandals such as the JCO's critical accident and the TEPCO's information falsification have caused the decline of nation's reliability on nuclear power. It is becoming inevitable to review and re-steer the conventional nuclear policy of expansion.

Mega-technologies tend to depend their control more and more on the specialists. Furthermore, their inherent features of costliness cause the inflexible financial structure. Decentralized control systems become impractical, leading to decision-making and management controlled by the centralized authorities.

Having these perspectives, how should we open up a "dialogue with the nation" for a better energy policy? The citizens themselves should be more conscious and change their living habits in order to solve energy problems. Assuming these standpoints, I will try to identify three key issues that require an examination with citizens' participation.

1. Evidently the current energy policies such as the "Basic Program for Energy Supply and Demand" and the "Long-Term Energy Supply and Demand Outlook," which have premised economic growth, should be reviewed, considering that the load mitigation of the environment and the secured sustainability (as well as the dissolution of uneven wealth distribution worldwide) be the right path to take. It is necessary for us to demonstrate which aspects in the daily life are most energy-intensive and how we can achieve to lower the consumption level gradually without degrading the quality of life while keeping rationality. To design a desirable energy plan by citizens themselves through a mechanism such as a "Consensus Conference" may work to awake their

consciousness about energy issues. The key issue would be how the energy policymaking process could be opened up to the public. Exclusively councils and committees of specialists currently control the process and even the discussions in the Parliament are constrained.

2. Necessary to recognize is that the whole picture and actual conditions of radiation over-exposure cases are not fully disclosed including the past serious accidents, nor current safety standards have full rational basis. (See, e.g., "2003 Recommendations of the ECRR -European Committee on Radiation Risk") Uranium mines, which is a major radiation exposure origin, radioactive substances contained in gaseous and liquid effluents discharged from nuclear power plants or occupational exposures of nuclear workers are not well covered by mass media. Should radioactive contamination and radiation exposure be accepted to some extent, the actual circumstances must be fully disclosed and the adequacy of risk acceptability must be on the agenda.

3. What the citizens should take serious note are the disparities between the people in the urban areas (the electricity consumption centers) and the rural areas (which assume the risks of nuclear accidents), and between the contemporary generations (beneficiaries of electricity production) and the future generations (who have to succeed negative legacy of radioactive wastes). In the circumstances of increasing interregional and intergenerational communications in the decentralized and core family societies, it is important not to taboo discussing the nuclear related issues.

An Open Discussion Is Needed for Nuclear Policy-making
— For the Realistic and Sustainable Energy Policy —

Mika Obayashi
Director
Institute for Sustainable Energy Policies, Japan

Nuclear power policy of Japan is now facing a big turning point after being driven as a national policy since the mid-1950s. In the social circumstances of the stagnated electricity demand growth and the electricity market liberalization, large-scale expansion of nuclear power is losing its economic advantages.

Concurrently, local communities become more and more antipathetic to the nuclear policy, which the government and electric utilities have bulldozed. Nuclear industries in Japan have to cope with various problems ahead, including the responsibility to prevent nuclear proliferation in the international communities, penetration of comfort and reduction of risks in local communities, or flexible electricity businesses.

Another issue just ahead of us is the commencement of service at the Rokkasho reprocessing facility. The nuclear fuel cycle, which has been advocated as the core pillar of the Japanese nuclear policy, has been pursued with full plutonium utilization in fast breeder reactors. But since the Japan's prototype fast breeder reactor "Monju" experienced an accident in 1995, the fast breeder reactor recycle program has been stalled. Utilization of plutonium in thermal reactors in the form of MOX fuels is lately advocated, as if it were the original and intrinsic objective. Plutonium utilization in thermal reactors is very doubtful economically as well as from the standpoint of an efficient utilization of resources.

It is high time to reconsider the Japanese nuclear policy with the active test operation of the Rokkasho plant foreseen for next year, is it not?

Forward to Construction of a New System for Nuclear Technology by Participation of the Regional Residents

Hiroaki Kashiwaya
Representative
Environmental Guardian of GAIA, Japan

Introduction

NPO Foundation EGG (Environmental Guardian of Gaia) authorized by Aomori Prefecture in Sept. 2000 has performed a fixed site measurement of environmental neutrons by the instruction of Prof. Kazuhisa Komura, Kanazawa University since 2001. The NPO EGG has organized Gaia Aoimori Energy Forum 2002 (keynote address: Hiranuma Minister of Economy and Industry) at Rokkasho Village and Mutsu City in Peninsula Shimokita, Gaia Aoimori Energy Forum 2003 (keynote address: Hiranuma Minister of Economy and Industry) at Rokkasho Village and Mutsu City in Penin. Shimokita, and Gaia Aoimori Energy Forum 2004 (keynote address: Shoichi Nakagawa Minister of Economy and Industry) at Aomori City, and has proposed a new image of the Peninsula as a not only an Nuclear Peninsula in Japan, but also as a general energy base in Asia since 2002.

Measurements of environmental neutrons by the regional residents

It has been heard that Prof. Kazuhisa Komura, Kanazawa University, had made a precise
measurement of leaked neutrons in the neutron criticality accident at the Tokai Factory of JCO for converting nuclear fuels by means of ultra low background gamma-ray spectroscopy of radioactive Au-198 formed by neutron capture of Au-197 (natural gold), and we have thought that the fixed site measurements of environmental neutrons at Rokkasho village should be started before operation of facilities for burnt nuclear fuel recycling and nuclear fuel converting. Under a strong conviction for making regional society that a level of region does not go beyond a level of intelligence of the residents, we have concluded that only a power up of science literacy among the residents leads us to safety of the region, and have started measurements of environmental neutrons. The measurements are not a daily monitoring, but correspond to the well known long-term measurements over several ten years of carbon dioxide in the air at Hawaii by Dr. Keeling.

Discussion

Problems attributed to a human error have happened at the nuclear facilities, for example, water leakage of a cooling pool for burnt nuclear fuels from nuclear power stations. In a collection of opinions, "Forward to Peninsula Shimokita of safety and relief" by the Aomori Prefecture Policy Marketing Committee, a following comment is seen:

"Nuclear facilities are important as places for employment, but it does not leads us to relief to leave safety to others. The residents must not be what are simply taught. The best policy for safety is participation of the residents. The residents with science literacy and with eyes of judgment are able to create the safety in the region." Activity for participation and understanding of the residents to utilization of nuclear power for their own happiness is a royal load to the safety in the region. This is the reason for necessity of the power-up of science literacy among the residents. The construction of the systems for measurements of environmental neutrons is a definite example of participation of the residents. This kind of scientific activities of the residents lead themselves to their own relieves in the region. Importance and significance of the measurements is extremely great.

Conclusion

As it has been safe today and it will be safe tomorrow, if days go safe in the region, the residents will be lead to confidence to the nuclear facilities and relief in the region. Safety is not what to be given, but what to be created by their own scientific activities as measurements. In the real world where "a crisis of environment" is discussed and they must rely on the nuclear power, it is greatly significant that construction of the systems for nuclear technology by participation of the residents is promoted step by step in the site of nuclear facilities. The data obtained in the measurements have been presented every year at "Workshop of Environmental Radioactivity" organized by High Energy Accelerator Research Organization, Tsukuba since 2002.

Stable Supply and Preservation of the Global Environment

Koji Sakamoto
Director
Social and Industrial Policy Dept.
Federation of Electric Power Related Industry Workers' Unions of Japan

Given the vulnerability of its energy supply structure, Japan must confront the need to increase its energy self-sufficiency, for which the development and utilization of energies other than fossil fuels must be actively carried out. However, it would be difficult on a long-term basis to ensure stable and inexpensive supplies of convenient energy sources such as electricity by using wind power, solar power or other renewable energies. Global environmental concerns also dictate that fossil fuels not be burned without limitations.

Nuclear Power Generation

Nuclear power generation should be identified as an important and indeed inevitable power source, for its long-term ability to provide a stable energy supply and to help preserve the global environment, and should be promoted actively along with the establishment of the nuclear fuel cycle.

Rigorous attitudes in safety matters are required, given the fact that the people's sense of safety and security grow ultimately out of safety at the workplace.

Renewable Energies

Because renewable energies will, by definition, never be depleted, have excellent environmental characteristics, and are purely domestic (that is, do not depend on imports), should be affirmatively introduced in Japan, which has limited energy resources. "Renewables" should, however, be promoted with recognition of the need for balance among all available energy sources, as there are unresolved issues with renewables including supply stability and cost.

Carbon-free hydrogen production technology from production to use should be developed for hydrogen energy systems to be used.

Energy Conservation

Energy conservation should be an embedded element in people's lives and industrial activities. It should be promoted by promoting development of energy conservation technology and efficient use of energy, rather than by restraining demand or limiting consumption.

Friday, April 23

Session 5

"Civil Society and Nuclear Energy"

Part II : Public Dialogue

"Let's Think about Wealth in Life and Energy."

15:45-17:30

Coordinator:
Yoshiko Tsuchiya, Freelance Newscaster, Japan

What is wealth? The values of society and the views of individuals are changing and becoming more diversified. Some people wish to live "slow" lives – comfortable, conservative, expending little energy, enjoying nature – in contrast to the "fast" life of efficiency and convenience. Believing that economic activities alone do not make a society, some business people are putting more emphasis on caring for children and the elderly, and on volunteerism. Municipalities are posting the slogan: "No need to push ourselves." An awareness revolution, a new sense of values, has been born.

On nuclear and energy issues, among others, it is important not only to seek solutions based on traditional views of growth, security, and CO_2 reduction, but to consider the truly new values arising out of individual life preferences and from diverse segments of civil society.

In this session, Part II, along with continuing discussions from Part I, reports and comments on the values born in individual consciousness and the lives of citizens will be aired, especially from women's viewpoints. Then all participants, including the general public, will consider and exchange opinions on how such new sensibilities relate to and influence nuclear and energy issues.

[MEMO]

[MEMO]

List of Members of the Preparatory Committee for the 37th JAIF Conference

Short Biography of Chairpersons, Speakers and Panelists

Members of the Preparatory Committee for the 37th JAIF Annual Conference

Chairman :	Yoichi Kaya	Professor Emeritus, The University of Tokyo
Members :	Yojirou Ikawa	Editorial Writer, The Yomiuri Shimbun
	Yohji Uchiyama	Professor, The University of Tsukuba
	Toshio Okazaki	President, Japan Atomic Energy Research Institute (2004.1.1~)
	Hideki Kato	President, Japan Initiative
	Keiji Kanda	Professor Emeritus, Kyoto University Director, Japan Energy Policy Institute
	Tetsuji Kishida	Director and Executive Vice-President, The Kansai Electric Power Co.,Inc.
	Isami Kojima	Vice Chairman, The Federation of Electric Power Companies
	Masazumi Saikawa	Mayor, Kashiwazaki City
	Shinzo Saito	President, Japan Atomic Energy Research Institute (~ 2003.12.31)
	Yoshikazu Sasaoka	President, The Federation of Electric Power Related Industry Workers' Union of Japan
	Ryoichi Shirato	Executive Vice-President, Tokyo Electric Power Co.
	Ichiro Taniguchi	Chairman, The Japan Electrical Manufacturers' Association Chairman, Mitsubishi Electric Corporation
	Keiichi Nagamatsu	Managing Director, Japan Business Federation
	Konoe Fujimura	Senior Executive Director, Japan Association for Environment and Society for the 21st Century
	Kazuko Miyamoto	Director, Consumer Research Institute, Nippon Association of Consumer Specialists
	Kenji Yamachi	Professor, The University of Tokyo

Observers:	Nobuo Fujishima	Director for Atomic Energy, Directorate General for Science and Technology Policy, Cabinet Office
	Itaru Watanabe	Director of Atomic Energy Division, Research and Development Bureau, Ministry of Education, Culture, Sports, Science and Technology
	Shigeru Maeda	Deputy Director General, Planner for Nuclear Energy Policy, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry
	Kenichiro Matsubayashi	Deputy Director, Science and Nuclear Energy Division, Ministry of Foreign Affairs (~ 2003.12.14)
	Jun Miura	Deputy Director, Science and Nuclear Energy Division, Ministry of Foreign Affairs (2003.12.15~)

OPENING SESSION

Fumio Kawaguchi

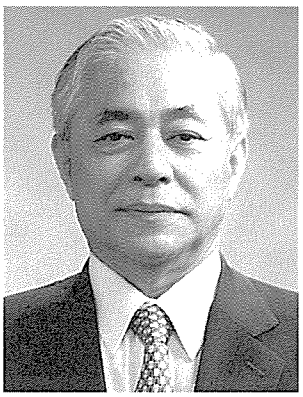
Year of Birth: 1940

Education:

1964 Graduated from Commercial Science Department, Waseda University, Tokyo

Career History:

1964 Joined Chubu Electric Power Co., Inc.
1993 Senior General Manager, General Manager of Purchasing & Contracting Department
1997 Director,
1999 Managing Director,
2001 President & Director



Jun-ichi Nishizawa

Date of Birth: September 12, 1926

Occupational Career:

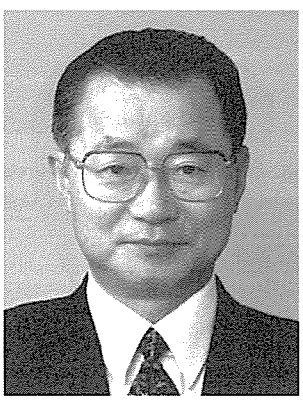
1962～1990	Professor, Research Institute of Electrical Communication, Tohoku University
1968～present	Director, Semiconductor Research Institute, Semiconductor Research Foundation
April 1990	Emeritus Professor, Tohoku University
1990～1996	President, Tohoku University
1996～present	Project Leader, Sendai Research Center, Tele-communications Advancement Organization of Japan
1997～present	Director, Tohoku Independent Comprehensive Training Center
1997～present	Honorary President, Miyagi University
1998～present	President, Iwate Prefectural University
June 2000～Present	Chairman, Japan Atomic Industrial Forum, Inc.

Award and Conferment:

1974	Japan Academy Prize
1983	Person of Cultural Merits (Bunka-Korosha) conferred from Japanese Government
1989	The Order of Cultural Merits (Bunka-Kunsho) conferred from Japanese Emperor
2002	The First Class Order of the Sacred Treasure
2002	Establishment of IEEE Jun-ichi Nishizawa Medal

Academic Activity and Honorary Membership:

1995	Member of the Japan Academy
1996	Honorary Foreign Member of the Korean Academy of Science and Technology and others



Takeo Kawamura

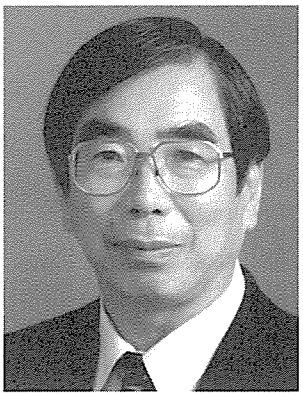
Date of birth: November 10, 1942
Place of birth: Yamaguchi Prefecture

Education:

March, 1967 Graduated from Faculty of Business and Commerce,Keio University

Professional Career:

April, 1967	Seibu Oil Co., Ltd
August, 1976	Elected as a member of the Yamaguchi Prefectural Assembly for the first time (re-elected three times consecutively until 1990)
February, 1990	Elected as a member of the House of Representatives (H.R.) for the first time (re-elected five times until now)
November, 1991	Director, Special Committee on Traffic Safety, H.R.
September, 1993	Head, Education Section, Liberal Democratic Party (LDP)
October, 1993	Member, Japanese National Commission for UNESCO
October, 1995	Deputy Chairman, Policy Research Council, LDP
January, 1996	Parliamentary Vice-Minister of Justice
November, 1996	Director, Committee on Education, H.R.
November, 1996	Director, Education Division, LDP
October, 1997	Member, Committee on Budget, H.R.
October, 1997	Deputy Chairman, Research Commission on the Educational System, LDP
August, 1998	Director, Committee on Science and Technology, H.R.
March, 1999	Director, Special Committee on Youth Affairs, H.R.
October, 1999	Senior State Secretary for Education, Science, Sports and Culture
July, 2000	Deputy Chairman, Policy Research Council, LDP
December, 2000	Senior State Secretary for Education, Science, Sports and Culture
January, 2001	Senior Vice Minister of Education, Culture, Sports, Science and Technology
September,2003	Minister of Education,Culture,Sports,Science and Technology



Yoichi Kaya

Date of Birth: May 18, 1934

Education:

1957	BA (engineering), the University of Tokyo
1962	Doctor of Engineering, the University of Tokyo

Occupational Career:

1963	Lecturer, Department of Electrical Engineering, the University of Tokyo
1978	Professor, Department of Electrical Engineering, the University of Tokyo
1993	Senator of the University of Tokyo,
1995	Professor Emeritus, the University of Tokyo
1995～Present	Professor, Keio University (SFC),

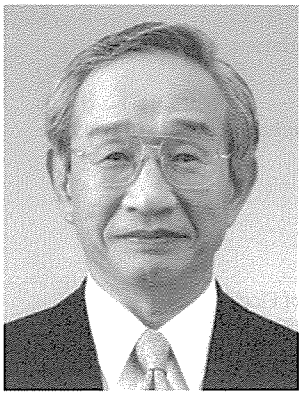
Current Position:
Director General, Research Institute of Innovative Technologies for the Earth (RITE)
Director, Crest environment program, Japan Science and Technology Corporation

Principal activities in the government of Japan:
Chairman, Energy Council, METI
Member, Environment Council, Ministry of Environment

International Activities:
Chairman of National Committee, International Institute of Applied Systems Analysis (IIASA) Luxembourg, Austria

Awards:
7 awards from 4 Japanese academic institutions
3 publication awards

SPECIAL PRESENTATIONS



Tadashi Okamura

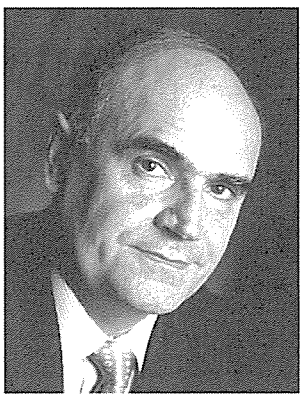
Date of Birth: July 26, 1938

Takashi Okamura is President and CEO of Toshiba Corporation, One of the world's leading manufacturers of electrical and electrical and electronic products and systems.

Mr. Okamura was born in Tokyo in 1938 and graduated in Law from the University of Tokyo in 1962. He received his MBA from the Graduate School of Business at the University of Wisconsin in 1973. He joined Toshiba in 1962 and was assigned to the Instrument and Automation Division, the first move toward a career devoted to delivering essential systems supporting advanced social infrastructure. Achievements in that career include launching the first digital instrumentation control systems, which established Toshiba as aforce in a high growth area.

Since his appointment as President and CEO in June 2000, Mr. Okamura has vigorously promoted use of six-sigma methodology to revitalize Toshiba's corporate culture and operations and steered the company to become a complex corporation acyive in three essential business domains: industry and society, the individual, and components, In 2001 Mr. Okamura launched the '01 Action Plan, an ambitionus series of reforms for profitability centered on intensified competitivenness, atreamlined management and corporate initiatives.

Mr. Okamura played rugby at university and after joining Toshiba, and finally hung up his boots at the age of 40. Today he is a keen holiday golfer. He is married to Hiroko and they have a son and a daughter.



Alain Jean-Marie Bugat

Date of Birth: 9/8/1948

Education :
Graduated from the French "Ecole Polytechnique" and from the "Ecole Nationale Sup_rieure des Techniques Avancées".

Professional Career:

January 2003～present	Chairman at French Energy Atomic Commission (CEA)
1999～ 2003	Chairman & C.E.O. at TECHNICATOME
1992～May 1999	Director of the Advanced Technologies Division - CEA
1989～1992	Director for Defence Program, then, Deputy General Manager then, General Manager at CISI INGENIERIE : European Software company
1984～1989	Deputy Director of the Nuclear Test Division - CEA
1982～1984	Assistant to the General Director of Industry (Ministry of Industry) Chief of "Observatory of Industrial Strategies"
1980～1982	Deputy Manager - Experiments and Measurements Unit
1972 ～1980	Research Engineer, then Group Manager CEA/Limeil - Theoretical studies and design: Hydrodynamics - Photonics - Neutronics - Computing

Kang Rixin

Year of Birth: 1953

Education:

1978	Graduated from Reactor Engineering Department, Shanghai Jiaotong University

Professional Career:

2003	President, China National Nuclear Corporation (CNNC)
1999	Vice President, CNNC
1996	Assistant President, CNNC, and Chairman of the Board, General Manager, Third Qinshan Nuclear Power Co. Ltd.
1978	China Institute of Atomic Energy (CIAE): Technician, Assistant Engineer, Engineer, Deputy Division Director, Secretary of Branch Party Committee, Researcher, Senior Engineer of Section 18, Deputy Head of Department of Reactor Engineering, Vice President
1972	Working in the Project Managing Section of Yangzhuang Electric Irrigating Plant, Datong County, Shanxi Province

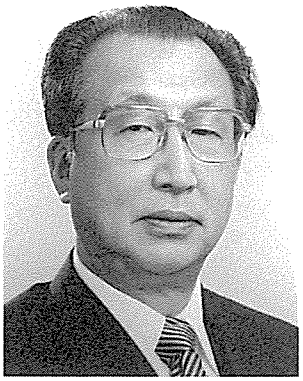
Nils J. Diaz

Education:
B. S. Degree in Mechanical Engineering from the University of Villanova, Havana
M. S. in Nuclear Engineering
Ph.D. in Nuclear Engineering Sciences from the University of Florida
A Fellow of the American Nuclear Society, the American Society of Mechanical Engineers and the American Association for the Advancement of Science

Professional Career:

2003	Chairman of the Nuclear Regulatory Commission (NRC)
1996	Commissioner with the NRC
~1996	Professor of Nuclear Engineering Sciences at the University of Florida
	Director of the Innovative Nuclear Space Power Institute (INSPI)
	President and Principal Engineer of Florida Nuclear Associates, Inc.
	Director of INSPI for the Ballistic Missile Defense Organization, DoD
	Associate Dean for Research at the California State University
	Principal Advisor to Spain's Nuclear Regulatory Commission

SESSION 1



Masaharu Shibata

Date of Birth: February 21, 1937

Education March, 1959 Graduated from Faculty of Law, Nagoya University

Professional Career:

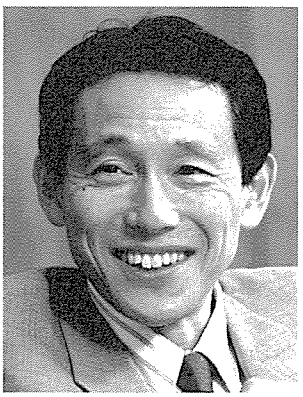
1959	Joined NGK Insulators, Ltd.
1983	A Member of the Board of Director
1987	Managing Director
1991	Executive Managing Director
1994	President & Chief Executive Officer
2002	Chairman & Chief Executive Officer

Organizational and Official Positions:

1995	Executive Member of the Board of Directors, Chubu Economic Federation
2001	Chairman, Aichi Employers' Association
2001	Chairperson, Aichi Public Safety Commission
2002	Vice Chairman, Japan Business Federation
2003	Member of Fiscal System Council, Ministry of Finance
2003	Member of Labour Policy Council, Ministry of Health, Labour and Welfare
2003	Member of Postal Services Council, Ministry of Public Management, Home Affairs, Posts and Telecommunications
2003	Temporary Member of the Subcommittee for Evaluation of Japan External Trade Organization, Incorporated Administrative Agency Evaluation Committee, Ministry of Economy, Trade and Industry
2003	Consulat Honoraire de France a Nagoya

Medal of Honor:

1998	Commandeur de l'Ordre de Leopold, Kingdom of Belgium



Hideki Kato

KATO Hideki, after graduating from Kyoto University (Department of Economics) in 1973, had served as a governmental official in the Ministry of Finance from 1974 to 1996.

After he quitted his service, he founded an advocacy type think-tank Japan Initiative in April 1997. It is probably the first independent and not for profit think tank which formulates policies including administrative reform, social insurance system, and national and local fiscal system.

He aims to build up a broad network of reform-minded experts and to realize policies by conducting civil campaigns. He regards Japan Initiative as the key place to bring people together and rebuild the country.

He is a professor of Keio University (faculty of policy management) and publishes several books: Comparative studies of Socio-economic Systems in Asian Countries (Toyo Keizai, 1996), Financial Market and Global Environment (Diamond Press, 1997), Citizen and Bureaucrats (Kodansha, 1999).

Motoyuki Suzuki

Education:

1963	Graduated from the University of Tokyo
1968	Ph. D. in chemical engineering in 1968 from Graduate School of Chemical Engineering, University of Tokyo.

Professional Career:

1968～1984	Lecturer, Associate Professor at the Institute of Industrial Science, University of Tokyo
1984～2001	Professor, the Institute of Industrial Science, University of Tokyo.
1995～1998	Director General, the Institute of Industrial Science, University of Tokyo.
Currently	Professor at the University of the Air, Special Programme Adviser to UNU in academic activities.

Research Fields:

Adsorption science/technology, water quality control technologies, water quality modeling, vegetation modeling, bioassay by using mammalian cells.

Akihiko Tanaka

Akihiko Tanaka is Professor of International Politics and is currently the Director of the Institute of Oriental Culture, the University of Tokyo. He obtained his B.A. in International Relations at the University of Tokyo's College of Arts and Sciences in 1977 and his Ph.D. in Political Science at Massachusetts Institute of Technology in 1981. Mr. Tanaka's specialties include theories of international politics, contemporary international relations in East Asia, and issues in Japan-U.S. relations. He has numerous books and articles in Japanese and English including The New Middle Ages: The World System in the 21st Century (Tokyo: The International House of Japan, 2002).

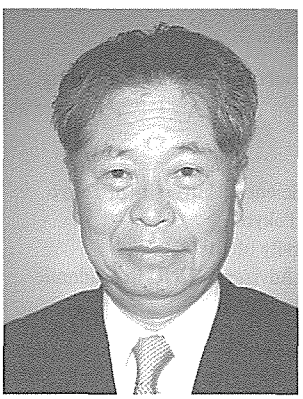
Mariko Hasegawa

Education:

1976	Graduated from Department of anthropology, Faculty of Science, the University of Tokyo
1986	Doctor of Science (the University of Tokyo)

Professional Career:

1980～1982	Wildlife Research Officer, Ministry of Natural Resource and Tourism, Tanzania
1987～1990	Research Associate at Department of Anthropology the University of Tokyo.
1987～1989	Visiting researcher at Department of Zoology the University of Cambridge (funded by the British Council)
1990～1995	Associate professor, Faculty of Jurisprudence, Senshu University
1992, 1994	Visiting associate professor, Department of Anthropology, Yale University
1996～1999	Professor, Faculty of Jurisprudence, Senshu University
2000	Professor, School of Political Science and Economics, Waseda University



Masao Nakamura

Date of Birth: April 1, 1933

Education:

1955	Kyushu Institute of Technology

Occupational Career:

1955～1959	Engineer, the Tokyo Metropolitan Government
1959	Joined The Yomiuri Shimbun
1983～1996	Editorial Writer, The Yomiuri Shimbun
1996～	Research Advisor of Central Research Institute of Electric Power Industry (Member, Transport Technology Council), (Member, Transport Technology Council)

Publications:

1975	Nuclear Power and Environment, ed. and co-author, The Yomiuri Shimbunsha, Tokyo
1976	Meteorological Resources, Kodansha, Tokyo
1982	Meteorological Economics, PHP Institute, Tokyo
1985	People and Technology that support Japan, co-author, Bungei Shunjusha Tokyo
1987	Columbus's Egg, Kodansha, Tokyo

Masayuki Yajima

Date of Birth: March 19, 1947

Present Position:
Senior Associate Vice President
Central Research Institute of Electric Power industry (1970 ~)

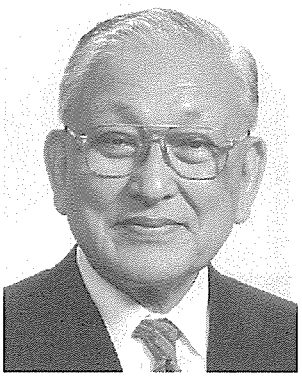
Academic Background:
Ph.D., Public Administration, International Christian University
M.S., Public Administration, International Christian University

Specialized Professional Competence:
Public Utility Economics, Electric Utility Management

Books:
"Liberalization of Electric Markets" (Japanese), Nihon Kogyo Newspaper Press (1994)
"Deregulatory Reforms of the Electricity Supply Industry," Quorum Books, Westport, ConnecticutÅELondon (1997)
"Electric Restructuring" (Japanese), Toyokeizai Shimposha (1998)
"Big-bang in Electricity Markets in the World" (Japanese), Toyokeizai Shimposha (1999)
"Energy Security" (Japanese), Toyokeizai Shimposha (2002)
"Reconsideration of Electric Restructuring" (Japanese), Toyokeizai Shimposha (2004)
etc.

Others:
Lecturer on Economics of Regulation at Gakushuin University (1994~1997)
Lecturer on Public Utility Economics at Keio University (1996)
Lecturer on Public Utility Economics at Hitotubashi University (1999)
National Interpreter's license for German language

SESSION 2

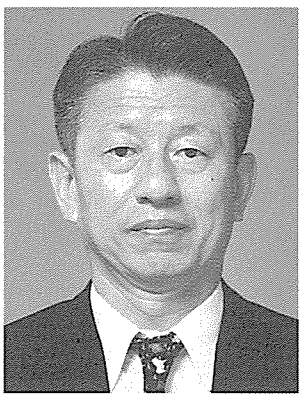


Yumi Akimoto

Year of Birth: 1929
Academic Career:
1951 B.S. in Chemistry from Tokyo Bunrika University (now Tsukuba University)
1954 Completed special research course at Tokyo Bunrika University
1957 Doctor's degree in Science at Tokyo Bunrika University
1958 to 1959
Studied at the Lawrence Radiation Laboratory at the University of California at Berkeley

Professional Career:
1954 Mitsubishi Metal Corporation (now the Mitsubishi Materials Corp.)
1976 General Manager, Nuclear Energy Department, Mitsubishi Materials Corp.
1978 Director, Mitsubishi Materials Corp.
1992 Executive Vice President,. Mitsubishi Materials Corp.
1994 President and CEO, Mitsubishi Materials Corp.
2000 Chairman, Mitsubishi Materials Corp.
2003 Director, Executive Advisor, Mitsubishi Materials Corp.

Public Offices and Other Positions:
Served a key position as a member of the commissions of the Ministry of Economy, Trade and Industry, the Ministry of Education, Culture, Sports, Science and Technology, the Cabinet Office, the Committee on Energy and Resources, Japan Business Federation, the Japan Association of Corporate Executives, the Japan Atomic Industrial Forum, Inc. (JAIF), the Japan Atomic Energy Relations Organization (JAERO), the Central Research Institute of Electric Power Industry (CRIEPI), the Japan Institute of Office Automation, the Research Institute of Innovative Technology for the Earth (RITE) and the Union of Organization on Science and Technology



Masao Takuma

Date of Birth: September 22, 1937

Education:
1961 Graduated From Faculty of Engineering
Electrical Engineering Course, The University of Tokyo

Occupation:
1961 Joined Tokyo Electric Power Company
1991 Superintendent, Kashiwazaki - Kariwa Nuclear Power Plant
1995 Director, Deputy Executive General Manager, Nuclear Power Division and Engineering Research & Development Division
1997 Director, Deputy Executive General Manager, Nuclear Power Division
1997 Director, Deputy Executive General Manager, Nuclear Power Division and Plant Siting & Environment Division
1998 Standing Auditor
1999 Retired from Tokyo Electric Power Company
1999 Senior Managing Director, Japan Atomic Industrial Forum, Inc. (JAIF)
2000 Executive Managing Director, JAIF
2001 The vice-chairperson, The AESJ Ethics Committee
2003 Vice President, Atomic Energy Society of Japan

Hiroshi Iida

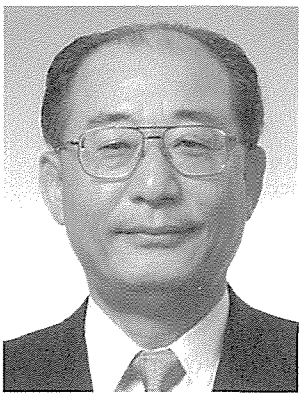
Year of Birth: 1935

Education:
1959 Graduated from Department of Chemistry, College of Engineering, Nihon University

Professional Career:
1959 Joined The Sankei Shimbun
1975 Senior Editor (environment, science and technology)
1977 Editorial Writer (environment, science and technology, justice, police)
1988 Deputy Editor in Chief
1996 Acting Editor in Chief
2000 Advisory Editor

Official Post:
1993～2000 Special Member of Committee for Policy Planning, Central Environment Council
1995～2000 Technical Member of Committee for International Cooperation, Atomic Energy Commission
2002 Member of Evaluation Committee on the wrong examination process of check records of Tokyo Electric Power Company

Others



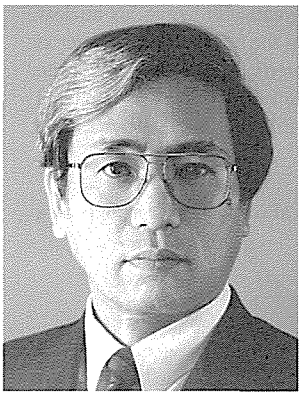
Akira Kawahara

Date of Birth: January1, 1942

Education:
1966 Bachelor of Science, Department of Nuclear Engineering, Kyoto University
1967 Left Master Course of Nuclear Engineering, Kyoto University

Occupational career:
1967 Joined Hitachi Ltd, Hitachi Works First Section, Nuclear Power Plant Engineering Dept.
1997 Managing Officer, General Manager Nuclear Power Systems Division
2001 Corporate Officer, Senior Chief Engineer, Corporate Technology, Power & Industrial Systems
2004 Corporate Officer, Senior Chief Engineer, Corporate Technology, Power Systems

Present Position:
Corporate Officer, Senior Chief Engineer, Corporate Technology Power Systems, Hitachi, Ltd.



Tetsuji Kishida

Date of Birth: February 18, 1941

Education:
1963 Graduated from OSAKA UNIVERSITY, School of Engineering
1965 Graduated from OSAKA UNIVERSITY, Graduate School of Engineering, Master of Nuclear Engineering

Professional Career:
1965 Joined THE KANSAI ELECTORIC POWER CO., INC (KEPCO)
1978 Manager, Technical Section, MIHAMA Power Plant, KEPCO
1979 Manager, Nuclear Fuel Management Section, FUKUI Nuclear Power Office, KEPCO
1981 Manager, Nuclear Fuel Division, KEPCO
1981 Manager, Reprocessing Section, Nuclear Fuel Division, KEPCO
1983 Manager, Core Management Section, Nuclear Power Management Division, KEPCO
1985 Manager, New York Office, KEPCO
1986 Deputy General Manager, Nuclear Power Management Division, KEPCO
1989 General Manager, Nuclear Fuel Division, KEPCO
1992 General Manager, Nuclear Power Planning Division, KEPCO
1995 Executive Officer, KEPCO
1997 Director, KEPCO
1999 Managing Director, KEPCO
2003 Director & Executive Vice-President,KEPCO

Yoshikazu Sasaoka

Date of Birth: June 6, 1946

Education:
1965 Graduated from Maebashi Technical High School

Professional Career:
1965 Entered Tokyo Electric Power Company Ltd.
1991 Chief of Executive Committee, Saitama Branch Office, Tokyo Electric Power Company Workers' Union
1997 Deputy Chief of Central Executive Committee, Head Office, Tokyo Electric Power Company Workers' Union
2002 Chief of Central Executive Committee, Hear Office, Tokyo Electric Power Company Workers' Union
2002 President, Federation of Electric Power Related Industry Workers' Unions of Kanto District
2002 Vice President, Federation of Electric Power Related Industry Workers' Unions of Japan
2003 President, Federation of Electric Power Related Industry Workers' Unions of Japan

Yoshihiko Sasaki

Date of Birth: September 18, 1944

Education:

1970 Graduated from Kyoto University, Master in Engineering

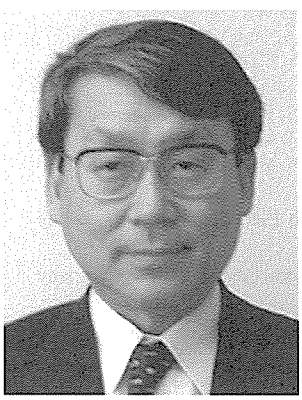
Professional Career:

1970 Entered the Ministry of International Trade and Industry (MITI)
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
1999 Director-General for Technology Policy Coordination, Minister's Secretariat
2001 MITI was reorganized as the Ministry of Economy, Trade and Industry (METI)
2001 Director-General, Nuclear and Industrial Safety Agency, METI

Charles M. Dugger

Charles Dugger has participated in the nuclear industry for thirty-four years. He began his nuclear career in the U.S. Navy nuclear power program. Mr. Dugger has served as the Operations Manager at Grand Gulf Nuclear Station, the General Manager of Operations at the Waterford-3 nuclear station, site Vice President at the Waterford-3 nuclear station, site Vice President at the Pilgrim nuclear station and is currently the Vice President, Nuclear Operations at the Nuclear Energy Institute (NEI) in Washington, D.C.

Mr. Dugger holds a Bachelor of Science degree and has been licensed at several nuclear units as a senior reactor operator.



Kenzo Miya

Year of Birth: 1940

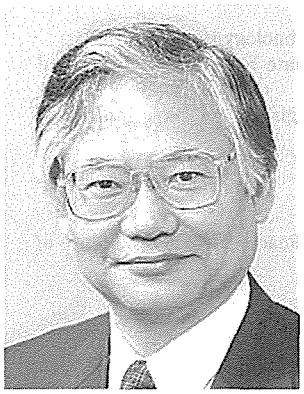
Education:

1964 Graduated from Department of Naval Engineering, Faculty of Engineering, University of Tokyo
1966 Graduate for Master of Nuclear Engineering Degree, Department of Nuclear Engineering, Faculty of Engineering, University of Tokyo
1969 Graduate for Doctor's Degree of Nuclear Engineering, Department of Nuclear Engineering, Faculty of Engineering, University of Tokyo

Academic Career:

1969 Research Institute of Nippon Steel Corporation, Ltd.
1972 Associate Professor, Faculty of Engineering, University of Tokyo
1982 Professor, Faculty of Engineering, University of Tokyo
1997 Professor, Graduate School of Engineering, University of Tokyo
2001~ Special Researcher, Japan Atomic Energy Research Institute
2001~ President of International Institute of Universality
2001~ Professor, Keio University
Professor Emeritus, University of Tokyo
Served also as Visiting Professor including at University of Maryland and Cornell University. Actively contributed as a Commissioner to various governmental/ academic commissions like the Japan Society of Mechanical Engineering, the Atomic Energy Society of Japan, Cryogenic Association of Japan or governmental institutions.

LUNCHEON



Shunsuke Kondo

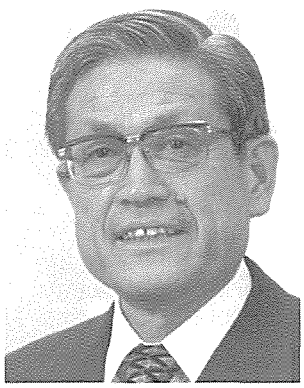
Date of Birth: July 26, 1942

Education :

1961～1965	Faculty of Engineering, The University of Tokyo Awarded the degree of BE in Nuclear Engineering
1965～1967	Faulty of Engineering, The University of Tokyo Awarded the degree of ME in Nuclear Engineering
1967～1970	Faculty of Engineering, The University of Tokyo Awarded the degree of DE in Nuclear Engineering

Occupational Experience :

1970～1971	Lecturer, Department of Nuclear Engineering The University of Tokyo
1971～1984	Associate Professor, Department of Nuclear Engineering The University of Tokyo
1984～1986	*Professor, Nuclear Engineering Research Laboratory* The University of Tokyo
1986～1993	Professor, Department of Nuclear Engineering The University of Tokyo
1993～	Professor, Department of Quantum Engineering and Systems Science, The University of Tokyo (Change of Department's name)
1999～2002	Director, Research Center for Nuclear Science and Technology The University of Tokyo
2004. 1.6	Chairman, Atomic Energy Commission



Makoto Takeuchi

Prof. Dr. Makoto Takeuchi was born in Tokyo in 1933. He completed the postgraduate school at the Tokyo University of Education with a doctorate in literature. His main research field is history of Edo Era culture and history of cities in early modern age.

Before he became Director of Edo Tokyo Museum, he served as principal researcher at the Tokugawa Institute for the History of Forestry, associate professor with Shinshu University, and professor with Tokyo Gakugei University. His other positions include Professor Emeritus of Tokyo Gakugei University, Director of Tokugawa Institute for the History of Forestry, Vice Chairman of Japanese Association of Museums, etc.

Dr. Takeuchi wrote a number of books and articles about: Edo and Osaka; citizens' lives in Genroku days in Edo Era; the downtown in Edo; the history of Sumo; the history of Tokyo metropolis; the Tokugawa Shogunate; and structures of the Edo city in early modern age, etc.

SESSION 3

Yasuhiko Fujii

Academic Degrees:

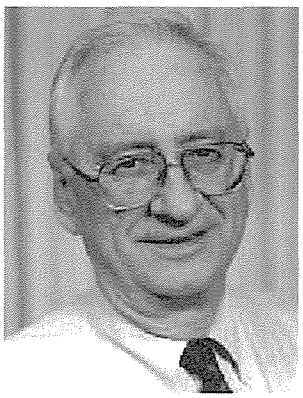
1967	Bachelor in Applied Chemistry from Tokyo Institute of Technology
1969	Master's degree in Nuclear Engineering from Graduate School of Science and Engineering, Tokyo Institute of Technology
1973	Doctor's degree from Graduate School of Science and Engineering, Tokyo Institute of Technology,

Occupational Career:

1972	Asahi Chemical Industries Ltd.
1974	Research Associate, Research Laboratory for Nuclear Reactors, Tokyo Institute of Technology
1987	Associate Professor
1992～	Professor
1979～1983	Staff of Department of Nuclear Fuel Cycle, International Atomic Energy Agency
1998～2004.3	Director, Research Laboratory for Nuclear Reactors, Tokyo Institute of Technology

Academic Society:

1997～1998	Board Member, Atomic Energy Society of Japan
1998	Chairman of Planning Committee, Atomic Energy Society of Japan



Larry R. Foulke

Education:

BS and MS in Nuclear Engineering, Kansas State University
A Fulbright Fellow at the Institute for Atomenergi in Kjeller, Norway,
PhD in Nuclear Engineering from MIT in 1967

Professional Career:

1968	joined the Bettis Atomic Power Laboratory, being responsible for fleet performance analysis, reactor methods and programming, reactor safety, environmental assessment, physical security, safeguards, and nuclear materials management.
1981 to 1991	Westinghouse Nuclear Energy Systems for managing training and simulation.
1984 to 1988	served as Adjunct Professor in the Nuclear Engineering Department at Penn State University teaching Nuclear Dynamics and Control, and Special Topics. Served as members of various commissions and associations Currently a Consultant in Reactor Physics at Bechtel Bettis, Inc.
1988～	Member of the American Nuclear Society (ANS)
2003.6～	President of ANS

Kazuko Miyamoto

Education:

B.A., Graduated from Rikkyo University, majoring in international law

Occupations:

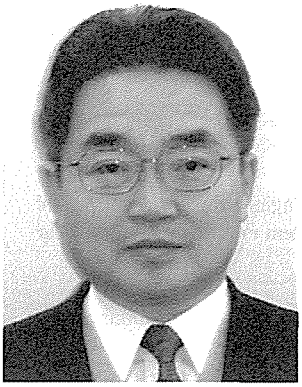
Director, Consumer Research Institute, Nippon Assn. of Consumer Specialists
Full-time Lecturer, Kawamura Women' University

Publications: (All in Japanese)

The Age of Whistleblowing, Kaden-sha, 2002, (Kobe Award)
The White Paper of Commodity Safety, Yuyu-sha, 1998, (Kobe Award)
Safety of Living Goods, Chikuma-shobo, 1988
Clever Child Care of Two-Income Families, Sun Mark Shuppan, 1982, (Translated and Published in Korea and China)
& Others

Membership:

Industry Structure Council, METI
Transportation Policy Council, Ministry of Land, Infrastructure and Transport
Natural Resources and Energy Investigation Council, METI
Chairman, Citizen's Council of Japan Law Association
& Others



Masayuki Igashira

Dr. Masayuki Igashira is an Associate Professor of Research Laboratory for Nuclear Reactors (RLNR), Tokyo Institute of Technology (Tokyo Tech.). He graduated in Applied Physics from Tokyo Tech. in 1974, and received a M. Eng. Degree in Nuclear Engineering from Tokyo Tech. in 1976. He changed from a doctor course student to a research associate at RLNR of Tokyo Tech. in 1978. He received a Dr. Eng. Degree in Nuclear Engineering from Tokyo Tech. in 1987. He was promoted to associate professor in 1990.

His main research subjects are (1) Nuclear Data related to Nuclear Engineering and Nuclear Astrophysics and (2) Neutron Capture Mechanism. In 2002, he was awarded the Nishina Memorial Prize, which is the most famous prize in physics in Japan.

He is in charge of the administration of education and evaluation in Tokyo Tech. He is the chair of Japanese Nuclear Data Committee.

Mitsuru Uesaka

Education:

1985 Ph.D (Nuclear Engineering), Graduate School of Engineering, University of Tokyo

Professional Career:

1985 Engineer, Ishikawajima-Harima Heavy Industries (IHI) Co. Ltd.
1991 Associate Professor, University of Tokyo (Nuclear Engineering Research Laboratory)
1999~Present
Professor, University of Tokyo (Nuclear Engineering Research Laboratory)

1999 Visiting Chief Researcher, Japan Synchrotron Radiation Research Institute
2000 Visiting Professor of High Energy Accelerator Research Organization
2000 Visiting Researcher of Japan Atomic Energy Research Institute
2001 Visiting Researcher of National Institute for Radiological Science

Specialties:

Quantum Beam Mechanics, Femto-second Electro-laser Synchronous Measurement, Laser Plasma Beam Source, Pico-second Resolution X-ray Analysis, Advanced Compact Accelerator for Medical Use

Toshiro Kitamura

Date of Birth: December 21, 1936

Education:

1967 Keio University, bachelor of Economics

Career:

2003 Team Leader of Project team for Promoting In-House Operation & Maintenance (present)
2001 Senior General Manager (present). General Manager of Executive Support Department
2000 Member of the human resources subcommittee of Japan Atomic Industrial Forum, Inc.
1999 General Manager of Personnel Department
1995 Acting General Manager of Tsuruga Office
1992 Assistant General Manager of Plant Operation Department of Plant Management Headquarters
1985 Manager of Education and Training Section of Personnel Department
1983 Manager of Labor Relation Section of Tsuruga Power Station and Tsuruga Construction Office
1968 Employed in the Japan Atomic Power Company

Kazuhiko Kudo

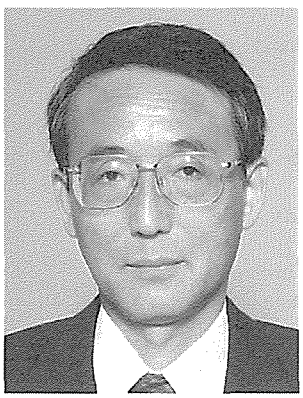
Education:

1966 Graduated from Kyushu University as BA , MA and PhD.

Professional Career:

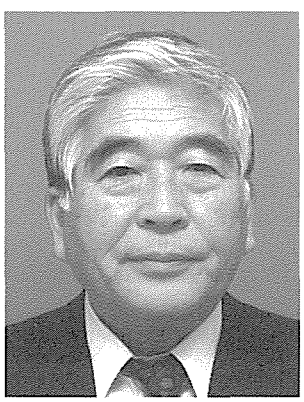
1987 Professor, the University of Kyushu after holding the position of lecturer at the University of Nagasaki, at the University of Kyushu, assistant professor at the the University of Kyushu in succession
Currently Professor of Applied Quantum Physics and Nuclear Engineering, Graduate School of Engineering, Kyushu University, specializing in nuclear system engineering and nuclear safety engineering.

He also serves as a member of committees such as the Committee on Examination of Reactor Safety, Nuclear Safety Commission of Japan.



Shunichi Tanaka

1967 Grad. Tohoku Univ.
1967 Japan Atomic Energy Research Institute (JAERI)
1997 Director of Planning Office of JAERI
1999 Deputy Director of Tokai Research Establishment of JAERI
2002 Director General of Tokai Research Establishment of JAERI
2004 Vice President of JAERI

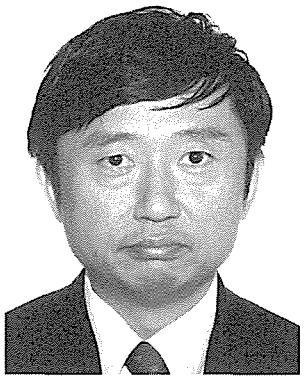


Tatsuya Murakami

Date of Birth: February 16, 1943

Education :

1966 Graduated in Hitotsubashi University (Sociology)
1966 Began employment at Joyo Bank
1996 Became manager of Hitachinaka branch of Joyo Bank
1997 Retired from Joyo Bank
1997 Became mayor of Tokai Village
(Currently serving his second term)



Itaru Watanabe

Date of Birth: January 22, 1958

Education:
Bachelor of Science, Tohoku University

Career:

1980	Enter Science and Technology Agency (STA)
1982	North Asia Division, Ministry of International Trade and Industry
1984	International Division, STA
1986	Beijing Office, Power Reactor and Nuclear Fuel Development Corporation
1988	Deputy Director, Nuclear Fuel Division, STA
1990	Deputy Director, Reactor Regulation Division, STA
1992	Deputy Director, Nuclear Safety Division, STA
1994	Director, 3rd Policy-Oriented Research Group, National Institute of Science and Technology Policy, STA
1996	Director, Radioactive Waste Management Regulation Division, STA
1998	Deputy Director, Washington Office, Japan Nuclear Cycle Development Institute
2001	Director, Advanced Reactor and Fuel Regulation Division, Nuclear and Industry Safety Agency, Ministry of Economy, Trade and Industry
2003	Director, Atomic Energy Division, MEXT

SESSION 4

Hiroyuki Torii

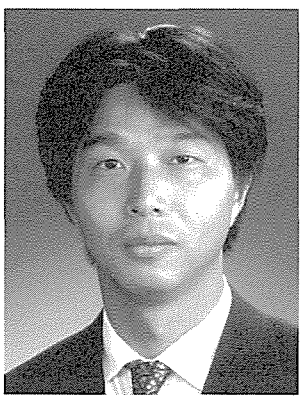
Year of Birth: 1942

Education:

1967	Graduated from Faculty of Engineering, The University of Tokyo
1969	Master of Engineering, The University of Tokyo

Professional Career:

1969～1976	Scientific News Correspondent to Nihon Keizai Shimbun (Nikkei)
1976～1982	Industrial News Correspondent to Nikkei
1982～1984	Scientific News Correspondent to Nikkei
1984～1987	Senior Fellow, Nikkei Industory Research Institute Editor-in-chief of Nikkei Hitech Report
1987～2002	Editorial Writer, Nihon Keizai Shimbun
2002～	Visiting Professor, Research Center for Advanced Science and Technology, The University of Tokyo
2002～	Professor, Research Laboratory for Nuclear Reactors Tokyo Institute of Technology



Masanori Maruo

Year of Birth: 1966

Education:

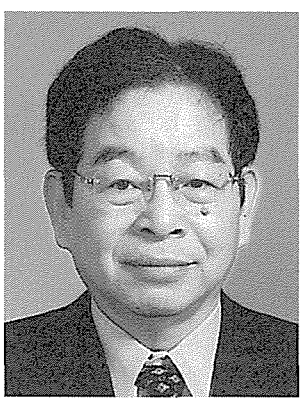
1991	Graduated from Keio University with master's degree of mechanical engineering

Professional Career:

1991	Joined Equity Research Department, Daiwa Institute of Research A utility sector analyst since 1993
2000	Joined Equity Research Department, Deutsche Securities Limited, Tokyo Branch. Currently Director

Others:

2002～2004	Ranked as #1 analyst in the utility sector in the Nikkei Financial Magazine and also in the Institutional Investor Magazine of U.S.



Keiji Kanda

Date of Birth: April 6, 1938

1961	Received Bachelor of Arts from International Christian University
1966	Received PhD from Tokyo Institute of Technology
1966～2002	Research Associate, Assistant Professor, Associate Professor, and Professor of Nuclear Material Control Research Reactor Institute, Kyoto University
1996～2002	Professor of Energy Policy Graduate School of Energy Science, Kyoto University

Present Titles:

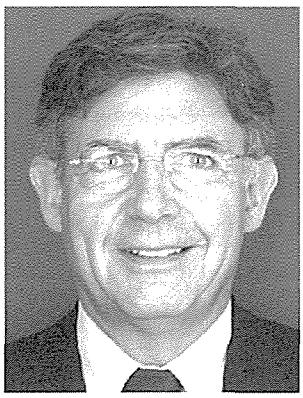
Director, Japan Energy Policy Institute
Professor Emeritus, Kyoto University
Professor, Musasbi Institute of Technology
Research Advisor, Central Research Institute of Electric Power Industry
Special Advisor, Atomic Energy Commission
Special Advisor, Nuclear Safety Commission

International Societies:

1996～1999	President, International Society for Neutron Radiography
1998～2000	President, The International Society for Neutron Capture Therapy

Decorations and Awards:

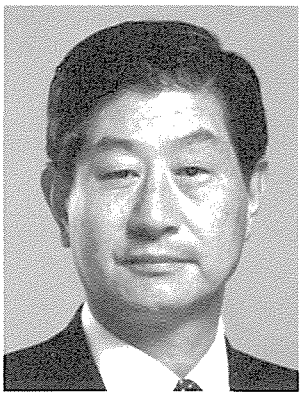
Awards of Atomic Energy Society of Japan (~, 2002 and 2003)
Decoration, Officier de l'Ordre National du Merite, France (1987)
Award, Science and Technology Agency Minister Prize (1999)



Jean-Jacques Gautrot

Education

1968	Graduated from "Ecole des Arts et Métiers" and "Ecole des Pétroles et Moteurs" Professional Career
1968	joined TECHNIP, an engineering company
1979	joined ST GOBAIN Group, as Chief Executive Director of a mechanical company
1984 to 1989	Site Director at La Hague for SGN (COGEMA Group) surpervising the construction and commissioning of UP2 and UP3 reprocessing facilities
1989 to 1996	Chairman and Chief Executive of Delattre Levivier, a specialized subsidiary of LYONNAISE DES EAUX Group dedicated to maintenance services for industrial facilities
1997	joined COGEMA
1998	Senior Director of the Business and Programmes Division, Nuclear Fuels and Recycling Branch.
2000	Vice President for the Commercial and International Development.
2002	Vice President and Chairman of the Executive Board of EURODIF in charge of the Enrichment Sector, and also, a member of the Executive Committee of COGEMA.
2003	Senior Vice President of AREVA, in charge of International and Marketing



Makoto Satake

Date of Birth: September 9, 1943

Education:

1968	Graduated the Faculty of Economics, Keio University

Occupational Career:

1968	Hired by Tokyo Electric Power Company (TEPCO)
1975	Assigned to Ministry of Foreign Affairs, Japanese Government
1980	Assigned to Japan Business Federation (Keidanren)
1985	Manager, Corporate Planning, TEPCO
1991	Manager, Urawa Sales Office, TEPCO
1994	Deputy General Manager, Corporate Planning Dept., TEPCO
1999	General Manager, Corporate Planning Dept., TEPCO
2002	Director of the board and Deputy Executive General Manager of the Nuclear Power Division, TEPCO

Takao Shiokoshi

Year of Birth: 1945

Professional Career:

1968 Joined The To-o Nippo Press

After working as a reporter at revising, organizational, social and cultural divisions, he covered the Rokkasho village issues at Noheji Branch Office from the beginning of the nuclear fuel cycle facility construction.

He served as Director of Organizational Division, Social Division, and Deputy Director and Director of Editorial Department.

Currently, Managing Director and Editor in Chief

Kenji Yamaji

Date of Birth: February 25, 1950

Education:

1972	B. Eng. (Nuclear Engineering), The University of Tokyo
1974	M. Eng. (Nuclear Engineering), The University of Tokyo
1977	Doctor of Engineering, The University of Tokyo

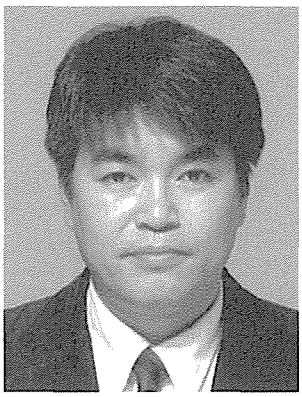
Professional Career:

1987～1993	Manager, Energy Systems Section, Economic Research Center, CRIEPI
1993～1994	Research Fellow, Socioeconomic Research Center, CRIEPI
1994～	Professor, Department of Electrical Engineering, School of Engineering, The University of Tokyo
1999～	Professor, Department of Advanced Energy, School of Frontier Sciences, The University of Tokyo

also served as follows

1981～1982	Visiting Researcher, Energy Analysis and Environment Division, Electric Power Research Institute (EPRI), USA
1992～1995	Director, Technical Program Committee of WEC Tokyo Congress Organizing Committee
1998～2001	Lead Author, IPCC TAR WG3 Chapter 8
1999～	Council Member, International Institute for Applied Systems Analysis (IIASA), Austria
2001～	Chairman, Green Power Certification Council, Japan

SESSION 5 PART 1



Yojiro Ikawa

Date of Birth:August 30, 1959

Education:
1982 Graduated from University of Tokyo
(BA, Basic Sciences)

Occupational Career:
1982 Joined Yomiuri Shimbun
2003 Editorial Staff Writer of Yomiuri Shimbun

Yohji Uchiyama

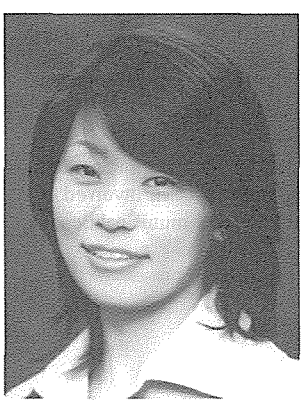
Date of Birth: December 14, 1949

Education:
1976 Graduate in Metallurgical Engineering from the faculty of Engineering, Tokyo Institute of Technology, Bachelor of Engineering
1978 Graduate Master course in Nuclear Engineering from the Graduate school of Tokyo Institute of Technology, Master of Engineering
1981 Graduate Doctor course in Nuclear Engineering from the Graduate school of Tokyo Institute of Technology, Doctor of Engineering

Occupational Career:
1981 Joined the Central Research Institute of Electric Power Industry (CRIEPI)
1985 Visiting Researcher in the Division of Advanced Power System, Electric Power Research Institute (EPRI)in the U.S. (until March 1987)
1990 Research fellow in Economic Research Center, CRIEPI
1995 Visiting Professor (concurrent post), Department of Built Environment, Graduate School of Interdisciplinary Science and Technology, Tokyo Institute of Technology (until March, 2000)
1997 Senior Researcher of Socio-economic Research Center, CRIEPI
2001 Professor, Institute of Engineering Mechanics and Systems,the University of Tsukuba (up to present)
2003 Visiting Professor, the University of Air

Publications:
1996 Uchiyama, "Our energy: Present and Future", Baifukan
2003 Y. Uchiyma, "Energy Engineering and Society", University of Air publication
and others

Academic Society Memberships:
Japan Energy and Resources Association
Japanese Society of Mechanical Engineering



Chiaki Aono

Date of Birth: 24 April 1970

Education:
1993 B.A. in Literature, Nagoya University
2003 MA. in Communication, Nagoya University

Work Experience:
1993～1995 Financial Institutions
1996～2002 United Nations Centre for Regional Development (UNCRD)
Operations Officer in PR/Training Section
2002～ International Institute of Universality, Researcher

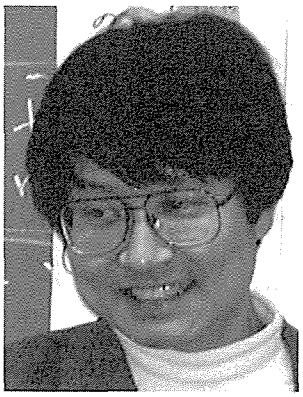
Etsuko Akiba

Education:
1971 Graduated from School of Commerce, Waseda University

Professional Career:
1971～1973 Public Relations Office, Japan Airlines
1989 Qualified as Advisory Specialist for Consumer Affairs (ASCA) accredited by the Minister of Trade and Industry
1989 Public Relations Department, The Federation of Electric Power Companies of Japan (temporary employee)
1996～1999 Public Relations Office, NTT East (temporary employee)

Present Posts:
President, ASCA Energy Forum (NPO)
Director and General Manager of Branch of East Japan, Nippon Association of Consumer Specialists
Director, Green Consumer Tokyo-net (NPO)
Advisory Staff, Public Relations Department, The Federation of Electric Power Companies of Japan
Member of Steering Committee, Japan Center for Climate Change
Secretary-General, "Lifestyle Review Forum 2003"

Committee Member:
Technical Committee on Consumption Life Technology of Japanese Industrial Standards Committee
Proper Information Disclosure Committee, Nuclear Management Organization of Japan
Assessment Committee on Sister/Friendship City Affiliation Projects, Japan Industrial Location Center
Genome Bay Tokyo Council (NPO)



Akifumi Ueda

Majored in Biology.
Professional Career:
1992 Organized a citizens' research & study group and has been addressing social issues related to science and technology.
1997 to 2001 A visiting researcher at the Institute for Policy Sciences
2002 A visiting researcher at the Universal Design Intelligence.
Currently, Representative, Citizen's Science Initiative (NPO), Director of Japanese Society for Science and Technology Studies (JSSTS), a member of the "Living Science Laboratory" in collaboration with the Socio Engine Associates, Ltd., and a writer and editorial supervisor of the ecology section of the "baby.com", a community web site for supporting childbirths and child care.

Publications:
"Bitter Pills" (translation) Keiso Shobo, 1987
Many articles for journals such as 'Science'
Currently he writes scientific articles and essays for quarterly journals "Hitorikara" and "Tsubu Tsubu" and a monthly journal "Family Care" and others.

Mika Obayashi

Director at Institute for Sustainable Energy Policies
Chairperson at the Green Energy "law" Network
She started her carrier as an energy/environmental activist by joining Citizens' Nuclear Information Center in 1992, after some years work experience.
There, she was in charge of energy and Asian nuclear power policies.
Mika Ohbayashi has written various articles on issues of nuclear energy policies and renewables, has given numerous presentations at workshops and conferences in Japan, and has been involved in several programmes on renewable and energy saving promoting initiatives in local municipalities in Japan.

Institute for Sustainable Energy Policies:
http://www.isep.or.jp/isep_e/index.html
Green Energy "law" Network: http://www.jca.apc.org/~gen/

Hiroaki Kashiwaya

Year of Birth: 1954

Education:

1977	Bachelor of Social Science, Faculty of Social Science, Waseda University

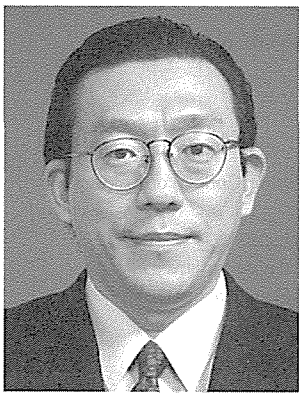
Professional career:

1977	Kuga Co. Ltd., Osaka
1980	Managing Director, Kashiwaya Co. Ltd.
1994	Representative Director, Kashiwaya Co. Ltd.

Public occupation:

1992～2003	Administrative Consultant, Ministry of Management and Coordination
1994～1995	Board Member, the Rokkasho Committee of Vision of the Promotion of Sightseeing
1998	Chairman, the Judging Committee of the Prize of Aomori Activation
1999	Board Member, the Aomori Committee of Principles of Voluntary Activity Supporting
2001	Board Member, the Aomori Conference of the Juvenile Future
2004	Board Member, the Aomori Council of Lifelong Learning

Rokkasho-based active participation in the Regional Activation programs since 1990



Kouji Sakamoto

1979	The Kansai Electric Power Co. Inc.
1980	Mihama Nuclear Power Station The Kansai Electric Power Co. Inc.
1989	Executive Committee Member, Head-Office Area Branch, The Kansai Electric Power Workers Union
1997	Executive Committee Member, Kansai Electric Power Workers Union
2003	Director, Social and Industrial Policy Dept, The Federation of Electric Power Related Industry Worker's Union of Japan

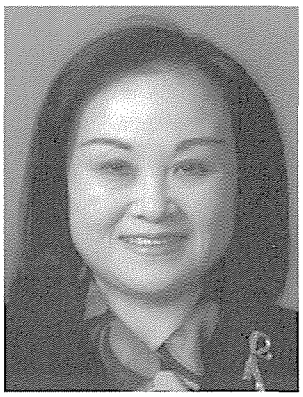
SESSION 5 PART 2

Yoshiko Tsuchiya

Date of Birth: October 31, 1956

Education:
Graduated from Faculty of Law , Keio University

Occupational Career:
She has the career of newscaster, started at TV Shizuoka and later became a freelance newscaster. She has been on various TV programs as a newscaster including those of NHK.



Terue Ohashi

Education:

1963	Graduated from Department of Philosophy, Faculty of Literature, Kyoto University, majoring in Sociology
2001	PhD in Arts from Showa Women's University

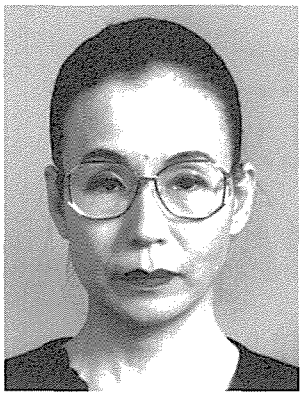
Career:

1990	Assistant Professor of marketing and advertising, Tochigi Junior College of Kokugakuin University
1992	Professor, Fuculty of International Economics, Reitaku University Served and serves as a member of/advisor to various central government's commissions, local governments and NPOs in the areas of social lives and environments.

Continuous activities in the journalistic arena in the above area.

Yukiko Suzuki

Journalist for ecology movement and food, the president of an organic certifying agency, "OCIA Japan". Born in Tokyo. Graduated from Chiba University (major: German literature). Attracted to the ecological lifestyle of German people, reported them for some Japanese magazines since ten years. Strongly interested in organic agriculture since the encounter with an organic inspector, now working as a staff of an organic certifier.



Yoko Beppu

Year of Birth: 1945

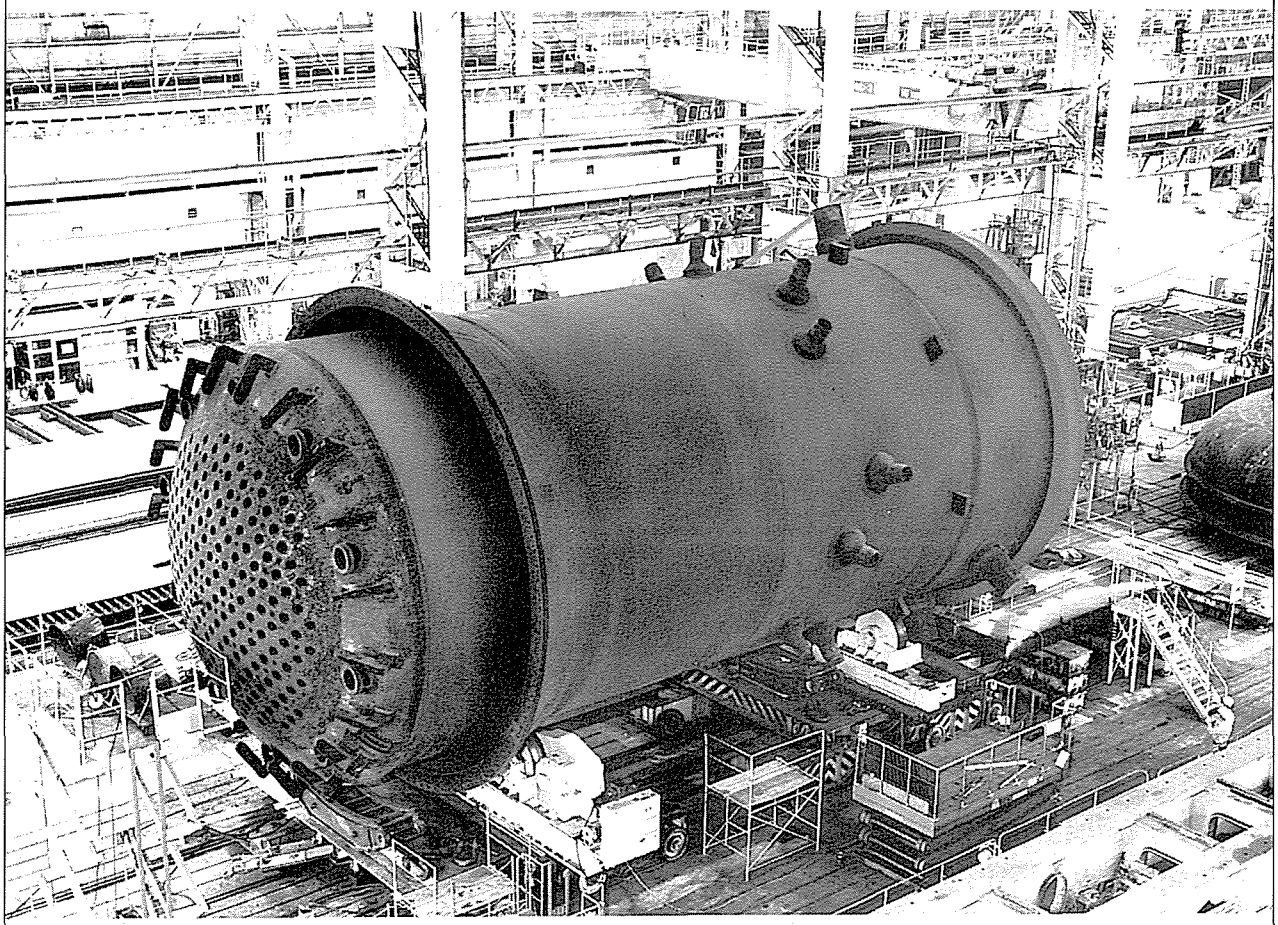
Education:
1969 Graduated from Faculty of Agriculture, Kyoto University
1990 Ph.D. in Agriculture (Kyoto University)

Professional Career:
1998 Professor, School of Humanities for Environmental Policy and Technology, Himeji Institute of Technology
2002 Professor, Graduate School of Humanities for Environmental Policy and Technology (Master Course), Himeji Institute of Technology
2004 Professor, Graduate School of Human Science and Environment (Doctor Course), University of Hyogo

Official Posts:
2002～ Member of Steering Committee, Social and Environmental Committee, Atomic Energy Society of Japan
2000～ Member of the Examination Committee of Hyogo Prefecture on the Environmental Effect Evaluation
1995～ Managing Director, Japan Society for Corporate Communication Studies
1990～ Managing Director and Member of Steering Committee, Japan Society of Security Management
Others

Publication:
1990 "System Agriculture" (joint work, in Japanese)
1994 "Nuclear Facilities in Farming and Fishing Villages - Analysis of the settlement process in nuclear fuel cycle facility sites", Dohosha Shuppan
Others

IHI IS AT TOP GEAR ESTABLISHING NUCLEAR POWER TECHNOLOGY

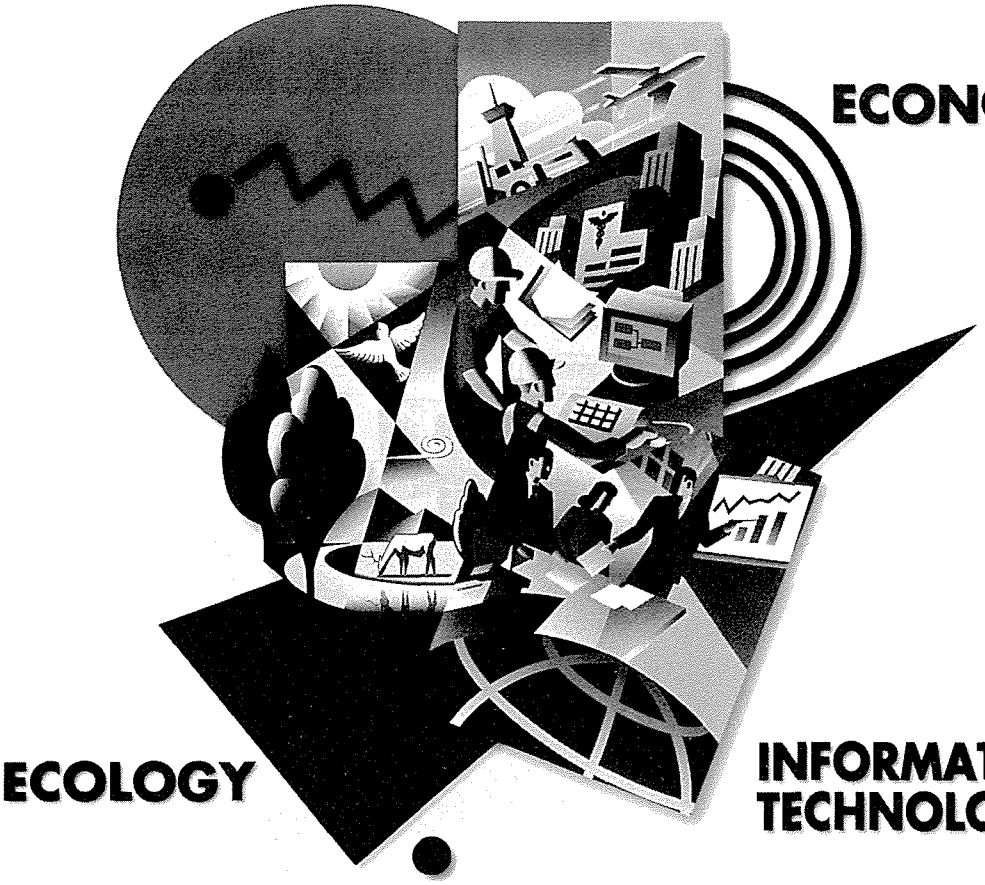


Reactor Pressure Vessel of 1,350 MWe class A-BWR.

IHI Ishikawajima-Harima Heavy Industries Co., Ltd. NUCLEAR PLANT SALES DEPT.
Shin Ohtemachi Bldg, 2-1, Ohtemachi 2-chome, Chiyoda-ku Tokyo, 100-8182 Japan Tel. 03(3244)5301

MITSUBISHI ELECTRIC

Changes for the Better



Energy Solutions for the 21st Century

In town, at home, in the office . . . Mitsubishi Electric supports the energy supply by putting environmentally friendly ideas into practice.

Energy is an essential part of our daily lives, and we at Mitsubishi Electric are working to provide 21st century solutions that meet the increasing diverse and complex energy requirements of our customers.

ECOLOGY
By developing cleaner sources of energy that help prevent global warming, we are contributing to the preservation of the Earth's precious and beautiful environment.

ECONOMY
Our relentless search for greater economy is leading to solutions that maximize cost performance by utilizing valuable energy resources more efficiently.

INFORMATION TECHNOLOGY
We are exploiting our preeminence in information technology to make advanced energy networking a reality.

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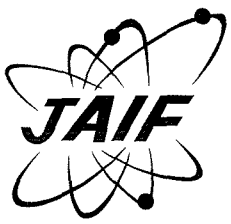

http://www.jaif.or.jp/

Japan Atomic Industrial Forum, Inc.

Dai-ichi Chojiya Building, 1-2-13, Shiba-daimon, Minato-ku, Tokyo 105-8605, JAPAN

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Dept. of Project Planning & Promotion	Tel: +81-3-5777-0752	Fax: +81-3-5777-0760
Asia Cooperation Center	Tel: +81-3-5777-0753	Fax: +81-3-5777-0757
Dept. of Information & Research	Tel: +81-3-5777-0754	Fax: +81-3-5777-0758
Atomic Industrial Journal	Tel: +81-3-5777-0755	Fax: +81-3-5777-0758
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