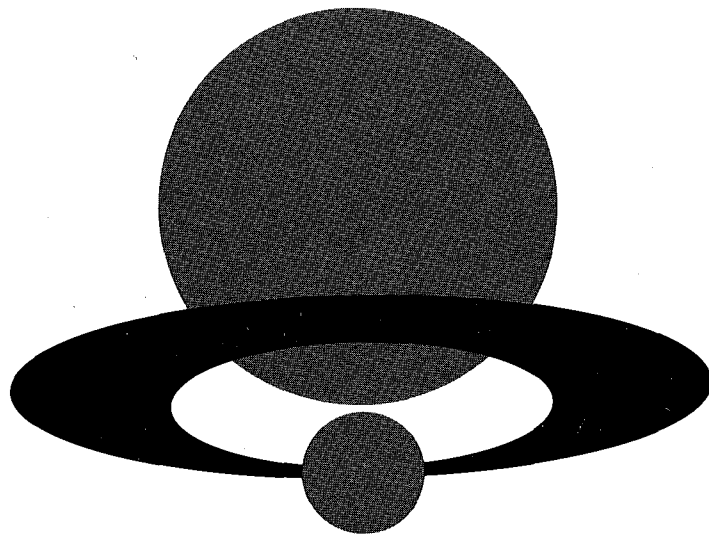


The 25th JAIF ANNUAL CONFERENCE

ABSTRACTS



April 8-10, 1992

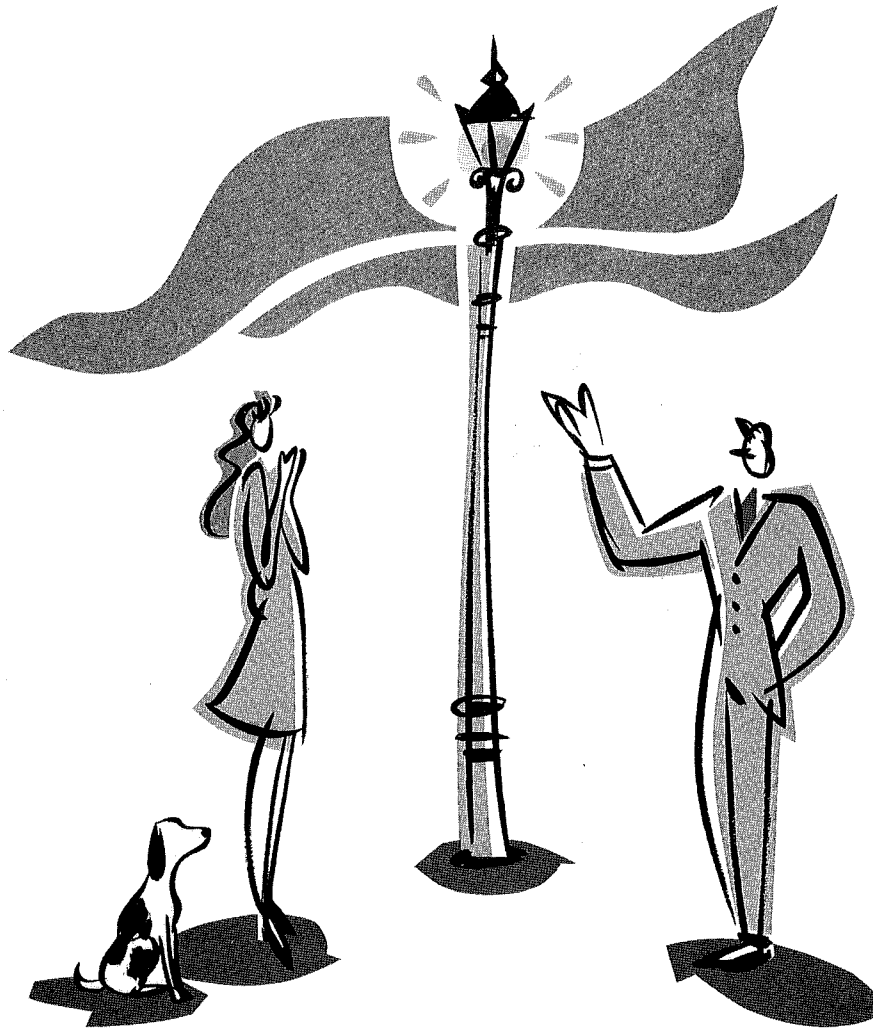
Pacifico Yokohama Conference Center

Yokohama, Japan

JAPAN ATOMIC INDUSTRIAL FORUM, INC.

NUCLEAR GENERATION

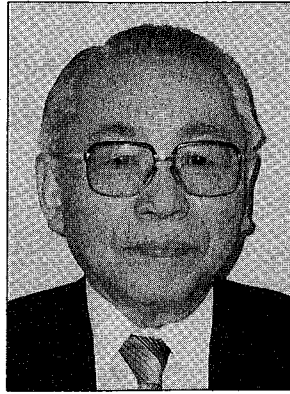
Brighter Lives, Better Environment



Today nearly one-third of the electricity comes from nuclear generation in Japan. At Mitsubishi, as one of leading suppliers of PWR (Pressurized Water Reactor) nuclear power plants, we are continuously probing new avenues of research and technology—to light up our lives even brighter tomorrow.



Head Office: Nuclear Energy Systems Headquarters, Tokyo, Japan
Phone: (03) 3212-3111 Telefax: (03) 3212-9843



Takashi Mukaibo
Chairman, JAIF



Takemochi Ishii
Chairman
Program Committee

Basic Theme for the Conference

Challenges to the 21st Century --Nuclear Energy in Our Society

The world has recently been undergoing drastic political, economic and social changes due to the collapse of the former Soviet Union late last year and the EC's recent decision on market integration by the end of this year, etc. With the United Nations Conference on Environment and Development scheduled for this coming June, there is an upsurge in concern about the question of how to deal with the earth's environmental problems. After the end of the Gulf war, international energy security acquired greater importance, and the role of nuclear power generation in relation to the need of diversification of energy sources, environmental problems, etc. is appreciated anew throughout the world.

Taking all of these factors into consideration, the main aim of the 25th JAIF Annual Conference is to gain a clear perspective on the role of nuclear energy in the next coming 50 years toward the 21th century after the 50th anniversary of mankind's first control of nuclear fission chain reaction -- December 2, 1992. At this Annual Conference, Japanese and foreign authorities and experts will give lectures on and discuss the new significance of nuclear power development, its position in the future and international tasks for the purpose of peaceful use of nuclear energy, etc.

Ample time will be allocated for discussions between speakers and Japanese and foreign members in the audience on the "safety of nuclear power generation". In addition, an international debate will be held to seek new ideas about an international nuclear non-proliferation system matched with the rapid progress of nuclear arms reduction talks between the U.S. and Russia and try to discover a sound international reprocessing and recycling principle before Japan starts full-scale use of plutonium. Society's need for nuclear power information will also be discussed in an effort to discover necessary measures for information supply and conveyance and other vital points in the future.



THE 25TH JAIF ANNUAL CONFERENCE
PROGRAM OVERVIEW

WED. APRIL 8

Opening Session
9:30-12:00

Session 1
14:00-18:15

Energy and Environment
--Nuclear Energy in
Another Fifty Years

Welcome Reception
18:30-20:00
Large Meeting Room
Conference Center, 3F
Pacifico Yokohama

THU. APRIL 9

Session 2
9:00-12:00

What is Safety?
--Toward a Unified
View

Luncheon
12:15-14:15
Large Meeting Room
Conference Center, 3F
Pacifico Yokohama

Film Show
13:00-14:00
Main Hall
Conference Center, 1F
Pacifico Yokohama

Session 3
14:30-18:00

Approaches for New
Paradigm of Peaceful
Utilization of Nuclear
Energy and Nuclear
Non-Proliferation

FRI. APRIL 10

Session 4
9:00-12:00

Nuclear Fuel Recycling
--Role of Japan in
the International
Nuclear Community

Session 5
13:30-17:30

What Does the Public
Want to Know About
Nuclear Information?

Farewell Reception
17:30-18:45
Ballroom
Yokohama Grand Inter-
Continental Hotel, 3F
Pacifico Yokohama

Basic Theme

Challenges to the 21st Century
--Nuclear Energy in Our Society

WEDNESDAY, APRIL 8

REGISTRATION 8:45 -
CONFERENCE CENTER, 1F, PACIFICO YOKOHAMA

OPENING SESSION 9:30 - 12:00

Chairman:

Kohei Abe
President
Chubu Electric Power Co., Inc.

Conference Keynote

Takemochi Ishii
Chairman
Program Committee
Professor
Keio University

JAIF Chairman's Address

Takashi Mukaibo
Chairman
Japan Atomic Industrial Forum, Inc.

Remarks by Chairman of Atomic Energy Commission

Kanzo Tanigawa
State Minister for Science and Technology

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Special Lectures:

"Science, Technology and Mankind towards the 21st Century"

Yevgeni Velikhov
Vice-President
Russian Academy of Sciences

"Warnings of the Geo-Catastrophe"

Toshibumi Sakata
Professor
Tokai University
Director
Tokai University Research and Information Center

Session 1 14:00 - 18:15

ENERGY AND ENVIRONMENT -- NUCLEAR ENERGY IN ANOTHER FIFTY YEARS

Chairman:

Takao Ishiwatari
President
Power Reactor and Nuclear Fuel Development Corp.

"The Future of Nuclear Energy in France and Europe at the
Beginning of the 21st Century"

Philippe Rouvillois
Administrateur General
Commissariat à l'Energie Atomique
France

"Global Safety Standards and Conventions"

Ivan Selin
Chairman
U.S. Nuclear Regulatory Commission

"Present Status of Nuclear Power Development and its Perspective
in China"

Yaozhong Min
Assistant President
China National Nuclear Corporation

"The Electrification of America: Nuclear Power in the 1990's"

J. Phillip Bayne
President and Chief Executive Officer
U.S. Council for Energy Awareness

.....

Chairman:

Joichi Aoi
President
Toshiba Corporation

"Retrospection on Nuclear Power and Future Energy Prospects"

W. Kenneth Davis
Consultant and Former Deputy Secretary of Energy
U.S.A.

"Energy Policy in Japan"

Masayoshi Hayashi
Commissioner
Atomic Energy Commission
Chairman
New Energy and Industrial Technology Development
Organization

"The Role of Nuclear Safety in the International Cooperation"

Klaus Toepfer
Federal Minister for the Environment, Nature Conservation
and Reactor Safety
Federal Republic of Germany

WELCOME RECEPTION 18:30-20:00

LARGE MEETING ROOM, CONFERENCE CENTER, 3F, PACIFICO YOKOHAMA

THURSDAY, APRIL 9

SESSION 2 9:00 - 12:00

WHAT IS SAFETY? -- TOWARD A UNIFIED VIEW

Chairman:

Yasumasa Togo
Deputy Chairman
Nuclear Safety Commission

Keynote Speech

"Safety Assurance of Nuclear Power Generation"

Teiichi Yamamoto
Director-General
Agency of Natural Resources and Energy
Ministry of International Trade and Industry

Panel Discussion

Adolf Birkhofer
President
Gesellschaft fuer Reaktorsicherheit(GRS)
Federal Republic of Germany

Michio Ishikawa
Professor
Hokkaido University

Chang-Saeng Rim
President
Korea Atomic Energy Research Institute

Shiro Sasaki
Managing Director
Tokyo Electric Power Co.

Edward James Varney
Deputy Chief Inspector
Her Majesty's Nuclear Installations Inspectorate
United Kingdom

Yanko Yanev
Chairman
Committee on the Use of Atomic Energy for Peaceful Purposes
Bulgaria

Discussion with the Audience

Note: Discussion with the audience means discussion between speakers and the audience. The audience is invited to exchange their views and make comments during each discussion.

LUNCHEON 12:15 - 14:15

LARGE MEETING ROOM, CONFERENCE CENTER, 3F, PACIFICO YOKOHAMA

Remarks

Kozo Watanabe
Minister of International Trade and Industry

Special Lecture:

"The Japanese People and Science"
Jun'ichi Nishizawa
President
Tohoku University

FILM SHOW 13:00 - 14:00

MAIN HALL, CONFERENCE CENTER, 1F, PACIFICO YOKOHAMA

Latest films on Japan's nuclear research and development activities will be presented to those who are not attending the Luncheon. Films are in Japanese only.

SESSION 3 14:30 - 18:00

**APPROACHES FOR NEW PARADIGM OF PEACEFUL UTILIZATION OF
NUCLEAR ENERGY AND NUCLEAR NON-PROLIFERATION**

Chairman:

Ryukichi Imai
Senior Counselor
Japan Atomic Industrial Forum, Inc.
Former Ambassador to the Conference on Disarmament in
Geneva

Panel Discussion

José Luiz de Santana Carvalho
President
National Commission of Brazil

Hubert de La Fortelle
Director for International Relations Division
Commissariat à l'Energie Atomique
France

William J. Dircks
Deputy Director General
International Atomic Energy Agency

Tetsuya Endo
Former Ambassador, Permanent Mission of Japan to the
International Organizations in Vienna

Bradley Gordon
Assistant Director for Non-Proliferation Policy
U.S. Arms Control and Disarmament Agency

Victor A. Sidorenko
First Deputy Minister
Ministry for Atomic Energy of the Russian Federation

(An additional panelist from India to be announced.)

Discussion with the Audience

Friday, April 10

SESSION 4 9:00 - 12:00

**NUCLEAR FUEL RECYCLING -- ROLE OF JAPAN IN THE INTERNATIONAL
NUCLEAR COMMUNITY**

Chairman:

Hiroshi Murata
Vice Chairman
Japan Atomic Industrial Forum, Inc.

Keynote speeches

"Japan's Policy for Nuclear Fuel Recycling"

Hiroto Ishida
Director General
Atomic Energy Bureau
Science and Technology Agency

"Nuclear Fuel Recycling -- The IAEA Perspective"

William J. Dircks
Deputy Director General
International Atomic Energy Agency

Panel Discussion

L. Neville Chamberlain
Chief Executive
British Nuclear Fuels plc.(BNFL)

William J. Dircks
Deputy Director General
International Atomic Energy Agency

Kozo Iida
Director and Executive Vice President
Kansai Electric Power Co.
Chairman
Committee for Nuclear Power Development
Federation of Electric Power Companies

Thomas L. Neff
Senior Member
Center for International Studies
Massachusetts Institute of Technology

Atsuyuki Suzuki
Professor
University of Tokyo

Discussion with the Audience

SESSION 5 13:30-17:30

WHAT DOES THE PUBLIC WANT TO KNOW ABOUT NUCLEAR INFORMATION?

Chairman:

Kazuyuki Ohama
Science Critics

Panel Discussion

Tadao Ishibashi
Attorney at Law

Marino Osami
Manager
Japan Consumers' Association

Tooru Shinohara
Director
Nuclear Power Division
Agency of Natural Resources and Energy
Ministry of International Trade and Industry

Shun-ichi Takebe
Editorial Writer
Asahi Shimbun

Tokunosuke Nakajima
Professor
Chuo University

Yoriaki Narita
Professor of Public Law
Yokohama National University

Teruaki Masumoto
General Manager
Public Relations Dept.
Tokyo Electric Power Co.

Commentator:

A. David Rossin
President-Elect
American Nuclear Society

Discussion with the Audience

FAREWELL RECEPTION 17:30 - 18:45

**BALLROOM, YOKOHAMA GRAND INTER CONTINENTAL HOTEL, 3F
PACIFICO YOKOHAMA**

Wednesday, April 8

OPENING SESSION 9:30 - 12:00

Special Lectures

Science, Technology and Mankind towards the 21st Century

Yevgeni Velikhov
Vice-President
Russian Academy of Science

Warnings of the Geo-Catastrophes

Toshibumi Sakata
Professor and Director
Tokai University
and
Tokai University Research and Information Center

Prologue "Geo-catastrophes"

Despite striking technological advancements and favorable economic developments, we vaguely to bear in mind that the thought of living in a society that will grow richer indefinitely is just an illusion. Perhaps there may come a day when culture collapses and humankind is destroyed.

Every day we hear news reports of one global and human crisis after another such as the population explosion, destruction of the ozone layer, global warming, abnormal climates, acid rain, destruction of the woods and forests, desertification, refugees, and hunger. In our immediate surroundings, however, we don't really sense any significant affects or changes. While enjoying prosperous and comfortable living standards unimagined 20 or 30 years ago, it is easy to dream that tomorrow will be even richer.

The destruction of humankind may come in a few hundred, a few thousand, a few tens of thousands or even in a few million years. We have absolutely no idea from the fragmentary reports that we normally come across. Yet analysis that scratches just below the surface of various available data and facts tells us that something very serious is already in progress. At first glance, the speed at which things are happening seems rather unimportant, but if a variety of factors were to react together, then we would be on the brink of destruction before we know what has happened.

Based on such circumstances, this report hypothesizes the very real possibility that humankind will be destroyed within the next hundred years if we continue our present course. The 21st century will be our final century. Here we will outline the scenario that backs up that hypothesis. When we talk about destruction here we don't really mean extinction where not one single human being will be left on Earth. Rather we mean that trying to maintain current standards of living will continue to degrade our environment until it becomes unfit for human survival.

Geo-catastrophic research neither forecasts nor prophesies. It simply points out the possibility that humankind will be destroyed within the context described here. Arguments in support of the theory are borne out mainly by various public-known data and facts as well as by qualitative reasoning. We have not implemented independent, systematic simulations which had been done in "The Limits to Growth" and "The Global 2000 Report to the President". Because in that case theories are sticklers for predictive models and equations which tend to lose sight of the

essence of the problem.

Our scenario argues that the destruction of mankind will occur in the year 2090 at the earliest -- a short 99 years from now. Ninety-nine years is the longest time frame that can be understood by actual feelings. A time frame of over one hundred years does not give the feeling that it is our problem. The leases on most colonies, such as Hong Kong, and publicly managed cemeteries in Europe are limited to 99 years. Ninety-nine is the dividing line between the finite and the infinite(eternity).

Our scenario is built on three 33-years stages, derived by splitting the 99-year period in three. This was originally agreed upon by our research society, based on the belief that the destruction of mankind will take place in stages rather than linearly. The first stage will take place during our children's generation, the second in our grandchildren's generation, and the third in our great-grandchildren's generation. It is possible to get a view of the human condition in each time period.

Geo-catastrophe indeed means global destruction. But to be more accurate, it refers to the destruction of mankind rather than the planet itself. Once people are gone, the Earth will return to its original lush state within an amazingly brief period of time. In a geo-catastrophe, mankind destroys the very foundation of its own existence, simultaneously triggering the Earth's road to recovery.

[MEMO]

Wednesday, April 8

Session 1 14:00 - 18:15

ENERGY AND ENVIRONMENT -- NUCLEAR ENERGY IN ANOTHER FIFTY YEARS

It is only half a century since mankind succeeded in controlling fission chain reaction, and nuclear power generation now occupies as much as one sixth of the total power generation of the world. Whereas appropriate measures for environmental issues are demanded on a global scale today, resulting in reevaluation of the role played by nuclear power in contribution to the reduction of the greenhouse effect and stable energy supply, this session will attempt to clarify the present situation of the world's nuclear power program and search for new significance in the development and future of nuclear power generation. The session will also attempt to grasp the current situation in the development of new sources of energy other than nuclear energy which is expected to be viable in the 21st century and to survey roles to be played by Japan and other countries in nuclear and other energy development.

WELCOME RECEPTION 18:30 - 20:00

LARGE MEETING ROOM, CONFERENCE CENTER, 3F, PACIFICO YOKOHAMA

XXVth JAIF ANNUAL CONFERENCE - YOKOHAMA, 8-10 APRIL, 1992

THE FUTURE OF NUCLEAR ENERGY IN FRANCE AND EUROPE
AT THE BEGINNING OF THE 21st CENTURY

by Philippe ROUVILLOIS
Chairman
Commissariat à l'Energie Atomique

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ABSTRACT

Industrialized countries rely significantly on nuclear energy for electricity production. For the next two or three decades, global energy demand will continue growing and nuclear power, along with other sources, will contribute to meet that demand.

Technologies have now reached the industrial development stage, and European efforts are directed at their improvement based on feedback from operating experience and experimenting with novel techniques and processes. The future of nuclear power is however dependent on the satisfactory handling of issues in the areas of safety, cost effectiveness, public acceptance and regulatory activity. A specific concern is public opinion, especially where environmental issues arise.

Major issues related to nuclear power are now to be handled on a world-wide basis, an approach which Europe intends to stress. Production levels and safety standards in Eastern and Central European countries, the availability of equipment to developing countries and non-proliferation issues are matters to be resolved on the international stage. Solutions exist or may be found, and must be implemented.

International Community has to find ways to conciliate non-proliferation requirements with the development of peaceful nuclear applications. This would require a "controlled transparency" of that development, a condition which has yet to be created, but might bring about such conciliation.

ABSTRACT

Remarks by Dr. Ivan Selin
Chairman
U.S. Nuclear Regulatory Commission
25th Annual Japan Atomic Industrial Forum Conference
Yokohama, Japan
April 8, 1992

The challenges in the next fifty years will be shaped, in part, by the changes of the recent past. In the aftermath of Chernobyl, the international implications of nuclear safety were defined and reinforced to an unprecedented extent. The more recent changes in the governments of the Soviet Union and Eastern Europe have contributed further to growing concerns over the safety of nuclear power plants worldwide. We are also seeing a growth of commercial nuclear power in new countries as they expand their industrial base. Global safety standards and international conventions and the need for additional international mechanisms for nuclear power plant safety will be discussed.

Present Status of Nuclear Energy Development and its Perspective in China

Min Yaozhong
Assistant President
China National Nuclear Corporation

(Abstract)

China is one of the countries which are rich in energy resources. But due to the large amount of population of china, the average energy reserve per capita is lower. Furthermore, those energy resources are not evenly distributed, which is also far from meeting the requirements of industrial and economic development in the coastal areas. As one of the components constituting Chinese energy resources, Chinese government has decided to make its greatest efforts in developing nuclear power. To develop nuclear power is also beneficial for the environmental protection.

Chinese research and development(R&D) work in nuclear energy was started in mid-1960's, and research and design work of nuclear power plant was started by the end of 1970's and beginning of 1980's. Qinshan nuclear power plant was connected with the national grid successfully on Dec.15, 1991, and now has been performing the various function test as schedule. And the preparation work for Qinshan 2 is now proceeding at the same time. The construction of Daya Bay NPP is now smoothly going on. Additionally, China has carried out a series of R&D work in fast breeder reactor(FBR), high-temperature gas-cooled reactor(HTGR), low-temperature heating reactor(LTHR), reactor for co-generation and advanced PWR (APWR). China has also made new progress in uranium exploration, mining and processing, fabrication of nuclear fuel assemblies of NPP, construction of pilot-reprocessing plant of NPP spent fuel, treatment of radio-wastes and decommissioning of nuclear facilities. By appropriate and planned development of nuclear power in this century, China could lay a good foundation for further development in next century and this could help China to arrive in a full mastery of technology, training of personnel, perfection of management of NPP. For nuclear power technology development, there would be two stages considered.

ABSTRACT

Presentation By

Phillip Bayne

President and Chief Executive Officer

U.S. Council for Energy Awareness

To The

25th Annual Conference

Japan Atomic Industrial Forum

April 8, 1992

Uncertainty is the dominant characteristic of the U.S. electric utility business in the 1990s.

This uncertainty is pervasive, and includes:

- serious questions about growth in electricity demand, and how much new capacity will be needed.
- related questions about what kind of new capacity (baseload or peaking) will be needed.
- questions about which fuels utilities should rely on.
- the possibility of more stringent environmental restrictions on fossil fuels.
- the degree of success that will be achieved with efficiency and demand-side management.

- the future price and supply of natural gas.

In this uncertain environment, U.S. electric utilities must think strategically — identifying the key trends developing today, projecting those trends into the future, making educated guesses about how they will play out, then positioning themselves to deal with conditions and circumstances five or 10 years ahead.

The U.S. nuclear energy industry has taken this strategic approach. The U.S. nuclear industry's *Strategic Plan for Building New Nuclear Power Plants* is a comprehensive, integrated list of all the actions that must be taken, all the issues that must be resolved, before U.S. utilities can order new nuclear plants.

The strategic plan assigns responsibility for managing the various issues, and sets timetables and milestones against which progress can be measured. Its goal is to create the conditions under which U.S. utilities can place an order or orders by the mid-1990s, with the first new nuclear unit or units on line by the turn of the century or soon thereafter.

The U.S. nuclear power industry's Strategic Plan represents prudent, necessary, strategic insurance against any one of a number of unpleasant surprises that may await the United States in the 1990s and the early years of the 21st century.

This paper will review progress in implementing the NPOC Strategic Plan since its publication in November 1990.

ABSTRACT OF SPEECH

Retrospection on Nuclear Power and Future Energy Prospects

W. Kenneth Davis

25th Anniversary Meeting of Japan Atomic Industrial Forum
Yokohama, Japan, 8 April 1992

The evolution of nuclear power is certain to be considered one of the most important developments of the 20th century and will make a major contribution to mankind in the 21st century. Actually, man has dreamed of utilizing atomic energy for more than 80 years with the discovery of the neutron and fission in the 1930's making it a practical possibility, one already exploited on a large scale worldwide. The utilization of production reactor technologies arising from wartime efforts was common for power production but in the United States the vision, drive, and engineering genius of one man, Hyman Rickover, led to the development of the light water reactor for submarine propulsion and directly to the commercial use of pressurized and boiling light water reactors--the most common and successful type of power reactor in the world today. Early work by Walter Zinn and others on the breeder reactor (cooled with liquid metal) has led to advanced development of this type of reactor which will eventually be used in parallel with LWR's when reserves of natural uranium become dearer.

The current negative attitude is fading away. The over-ordering of the 1970's (when growth rates were high) led to two decades when there has been no reason for substantial orders of new power plants of any sort. Sober reflection on the accident to the Three Mile Island reactor shows that while it was a costly experiment it proved as nothing else could the safety of the "inherently safe" light water reactor concept along with its containment and safety systems even of that early design. In sharp contrast, the Chernobyl accident demonstrated what could happen under entirely different conditions. History will also put in perspective the completely political nature of the present irrational concern about high level waste storage.

While fossil fuel resources will provide the vast reserves needed for power production and other uses during the coming century these sources will become more expensive and new technologies will be needed--and the fossil resources will be most desirable for uses other than power production which, however, will continue to grow as a fraction of total energy use.

While other energy sources such as solar will provide important sources of energy in many cases there is absolutely nothing which can compare with or substitute for nuclear power as a clean, safe, and economical source of electric power which will be used on a vast scale in the coming century--and history will surely validate that conclusion.

Energy Policy in Japan

Masayoshi Hayashi
Commissioner
Atomic Energy Commission
Chairman
New Energy and Industrial
Technology Development
Organization

Because of its extremely vulnerable energy supply structure, it is a critical task for Japan to assure by all means the stable energy supply to meet the increasing demand in future in the land. Japan has so far been making every and all efforts toward construction of an adequate energy mix that enables to relax restrictions on resources as much as possible by introducing a variety of alternative energy sources, in particular nuclear energy to the conventional oil. However in future energy policy, energy mix should primarily be constructed on the full recognition of environmental restrictions due to global environmental problem, such as global warming effect, and on now-getting intensive relationship in mutual economic reliance between Japan and the world in addition to conventional resource restrictions. Under such backgrounds, in June 1990, the Advisory Committee for Energy worked out the "Long-Term Energy Supply and Demand Outlook". Based on the report in October 1990, the "Supply Target for Alternative Energy Sources" was decided upon by the Cabinet. As regards issues around global environmental effects, the "Preventive Action Plan for Global Warming" was also decided in October 1990 by the Cabinet, thereby trying to maintain the coordination in the energy policy. After a set of decisions made so far, the world situation has been changing dramatically including outbreak of the Gulf war, nevertheless principles for energy securing expressed in the energy policy of Japan clearly indicates the direction that Japan should follow whatever the world situation may change in future.

The Long-Term Energy Supply and Demand Outlook published in June 1990 substantially emphasizes the restriction on the amount of CO₂ emission, full-fledged promotion of energy-saving countermeasures and active introduction of alternative energy sources as now going-on. In particular, the Outlook is characterized by thoughtful consideration on environmental restrictions, and the total amount of emitted CO₂ and chlorofluorocarbon could be stabilized below fiscal 1988 level after 2000 onward. And also by promoting energy conservation intensively, it is proclaimed that energy consumption in GNP unit will be improved by 36% as a whole by 2010. This 36%-improvement corresponds to the record attained during 1973 - 1988 when oil crisis took place twice. As a result, energy growth rate during 1988 to 2010 is estimated considerably low as 1% per year.

Regarding nuclear energy, it is continuously regarded as a major alternative energy source, and the installed capacity of nuclear power plant is estimated to grow to 50.5 GW in 2000, and

72.5 GW in 2010 from 28.9 GW in 1988. Nuclear Energy is an excellent energy for its high supply-stability in terms of quantity and cost, and also from the viewpoint of international contribution such as minimizing international energy demand restrains and responding sufficiently to the global environment issues as well. Japan is expecting that nuclear energy will play important role in the energy mix even in the 21st century, and hence Japan has decided to promote nuclear energy research and development programs steadily and substantially on condition that peaceful utilization and safety of it should be firmly secured. Especially, in order to utilize resources more efficiently, FBR Prototype Reactor "Monju" is now under construction in Fukui Prefecture, and the construction plan of civil reprocessing facilities, etc. are now in progress at Rokkasho Village in Aomori Prefecture aiming at early realization of the reprocessing recycle line.

In addition, major efforts are also being made to positively introduce such new non-fossil energies with low CO₂ emission and geothermal energy, etc., thereby expecting that non-fossil energy share will account for 27% (new energies; 5.2%, hydro power; 3.7%, geothermal; 0.9%, nuclear energy; 16.7%) on the total primary energy supply in 2010. In particular, in relation to solar energy which is regarded as a clean alternative energy, it is decided that the utmost efforts should be made for the maximum introduction by evaluating appropriately its characteristics. Introduction scope of solar energy by 2010 will be equal to the extent in which it is utilized in almost half of the total single-family house.

Thus, energy policy in Japan is highly motivated one, and not easy to accomplish because of numbers of unsolved problems lying in various aspects in economics, technologies and institutions. Energy issue nowadays extends to such a worldwide range, but given our daily lives are undoubtedly based on the indefinite benefits provided from energy, it is for sure an issue very close to every one. It is therefore essential to make utmost efforts at every level from individuals and enterprises to nations together with maintaining continuous economic development, to reconcile human activities and preservation of the global environment. It is also necessary to make international contributions positively as an international responsibility imposed on Japan. We believe, this can only be done on the basis of sufficient self-consciousness on the currently increasing roles of Japan in international communities.

The Role of Nuclear Safety in the International Cooperation

Klaus Toepfer
Federal Minister for the Environment,
Nature Conservation and Reactor Safety
Federal Republic of Germany

THURSDAY, APRIL 9

SESSION 2 9:00 - 12:00

WHAT IS SAFETY? -- TOWARD A UNIFIED VIEW

The recent global situation over nuclear energy indicates some confusion on various nuclear safety issues held by those concerned with nuclear energy, as is manifested in information about Chernobyl or the debate over nuclear power plants in Eastern Europe, etc. In the light of the surge of nuclear energy development around the world, this session will attempt to reexamine what is safety by clarifying the relations between safety and reliability and measures taken for severe accidents. For the purpose of further enhancing nuclear power safety in Japan and around the world, the session will try to clarify current nuclear safety issues and their solutions, while examining what Japan's contribution should be like to upgrade the safety of nuclear power plants in Eastern Europe, etc.

Discussion with the Audience

Safety Assurance of Nuclear Power Generation

Teiichi Yamamoto
Director-General
Agency for Natural Resources and
Ministry, Ministry of International
Trade and Industry (MITI)

1. Japan's Basic Principle for Energy and Nuclear Policy

(1) Energy Situation in Japan and the World

(2) Japan's Basic Principle for Energy Policy

(3) Japan's Nuclear Policy

2. Measures Taken for Assuring Safety of Nuclear Power Generation in Japan

(1) Current Situation for Safety Assurance of Nuclear Power Generation in Japan

(2) Concrete Measures Taken for Nuclear Safety Assurance by Ministry of International Trade and Industry

(3) Survey Report of Mihama Nuclear Power Plant's Incident and Its Countermeasures

(4) Cooperation in the Field of Safety of Nuclear Power Generation

[MEMO]

Thursday, April 9

LUNCHEON 12:15 - 14:15

LARGE MEETING ROOM, CONFERENCE CENTER, 3F, PACIFICO YOKOHAMA

Special Lecture

The Japanese People and Science

Jun'ichi Nishizawa
President
Tohoku University

[MEMO]

Thursday, April 9

SESSION 3 14:30 - 18:00

**APPROACHES FOR NEW PARADIGM OF PEACEFUL UTILIZATION OF
NUCLEAR ENERGY AND NUCLEAR NON-PROLIFERATION**

There has recently been a swift rise in the movement to promote nuclear disarmament in the U.S. and the former Soviet Union and rapid changes in the political order in the former Soviet Union and the world. In light of such a global trends, how should we conceive new problems for peaceful uses of nuclear energy and what solution should we find? Given the fact that the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) enters a new stage in 1995, this session will attempt to search for new approaches and ideas in keeping the international regime for non-proliferation, and clarify Japan's positive attitude on this issue.

Discussion with the Audience

[MEMO]

[MEMO]

Friday, April 10

SESSION 4 9:00 - 12:00

**NUCLEAR FUEL RECYCLING -- ROLE OF JAPAN IN THE INTERNATIONAL
NUCLEAR COMMUNITY**

Japan has adopted the basic policy to reprocess spent fuel and use recovered plutonium for its effective use in the nuclear energy program. Consistent efforts have been made to establish the nuclear fuel cycle industry such as building commercial enrichment or reprocessing facilities and promoting measures for radioactive waste management. An active international debate over the use of plutonium is now emerging. In this session, Japanese speakers will describe the policy of Japan, which is one of a few countries having nuclear fuel recycling in the world today and have candid views from other speakers over this issue. The session will then attempt a discussion over current problems and future tasks for nuclear fuel recycling.

Discussion with the Audience

Japan's Policy for Nuclear Fuel Recycling

Hiroto Ishida
Director General
Atomic Energy Bureau
Science and Technology Agency

Since the initial stage of development and utilization of nuclear energy, Japan has been consistently promoting the nuclear fuel recycling policy which involves reprocessing spent fuels and recycling the recovered plutonium and uranium as nuclear fuels. Such a coherent policy can be seen in the current Long-Term Program for Development and Utilization of Nuclear Energy (June, 1987) and in the report of the Advisory Committee on Nuclear Fuel Recycling (August, 1991).

Basic principles stated in these materials are summarized in the following points standing on the present viewpoint.

1 Preserving Natural Resources and Environment, and Contributing to the Formation of a Recycling Society

It is an important policy matter for Japan to play a leading role in efforts to save and recycle resources.

2 Making Nuclear Power a More Economical and Stable Energy Source in a Long-Term Perspective

It is internationally significant that Japan is committed to leading in the technical development of the recycling, from a viewpoint of making nuclear energy a more economical and stable energy source that can be used for a long time to come.

3 Making the Radioactive Waste Management in Japan More Appropriate

By reprocessing spent fuel, useful resources can be recovered and high-level radioactive waste can be separated and managed more effectively. Further advances in research and development of recycling could make radioactive waste management more appropriate.

4 Commitment to Nuclear Nonproliferation- To give as much transparency as possible to its nuclear fuel recycling programs so that concerns on nuclear proliferation in relation to Japan's programs will not be raised internationally

It is a national principle that Japan will not possess plutonium beyond the amount required to implement its nuclear fuel recycling programs. To that end, Japan will make steady use of plutonium in accordance with appropriate recycling programs.

5 Contributing to the Sound Development of Safeguards System and to Strengthening of the World Nuclear Nonproliferation Regime

It is obligations and responsibilities imposed to Japan to advance the peaceful use of nuclear energy.

Based on the above mentioned basic principles, Japan will make energy and all efforts for advancing plutonium application in LWRs and ATRs together with the development of FBR, as well as for the establishment of plutonium application systems through construction of Rokkasho reprocessing plant and correspondingly developing the MOX fuel fabrication into commercial operation.

Nowadays, worldwide concerns are focussing proliferation of nuclear materials and nuclear warheads technology from dismantling nuclear weapon accompanied by erosion of Soviet Union, Japan strongly expects that these materials should be placed under severe management by Russian Federation and other organizations concerned.

Japan, which has been promoting development and utilization of nuclear energy for peaceful use only and making constant efforts on the international basis for Nuclear Nonproliferation, recognizes that it should contribute to the world peace and stability by materializing the so-to-speak the "Second Atoms for Peace" concept in which dismantled nuclear materials are to be processed by applying nuclear energy technology for peaceful use.

From this point of view, STA is now doing technical and systematic studies on such systems as utilizing nuclear materials for power reactors (especially for Fast Reactor) fuels and enabling assured management and storage in order not to be reused for nuclear weapons production. Thus, Japan is sincerely hope that world concern could be swept off as soon as possible by further making thorough studies under the international framework well corresponding to the development of nuclear weapons reduction efforts.

Nuclear Fuel Recycling - The IAEA Perspective

by
**William Dircks, Deputy Director General
International Atomic Energy Agency
Vienna, Austria**

Abstract

1. Recent IAEA estimates put the total capacity of the world's nuclear power plants in 1990 and in the years 2000 and 2010 at 325, 387 and 456 Gigawatt (electric) respectively and the quantities of spent fuel arising in those years from electricity generation by those plants at 9700, 10 600 and 12 000 tons (heavy metal) respectively.
2. The fissile plutonium in those quantities of spent fuel amounts to 48, 50 and 58 tons respectively.
3. In 1990 the spent fuel reprocessing capacity available in the world was 4100 tons (heavy metal), and that the amount of fissile plutonium isolated by reprocessing in that year was roughly 14 tons. The reprocessing capacity available worldwide in the year 2000 is projected to be 6900 tons (heavy metal), and the amount of fissile plutonium isolated by reprocessing in that year is expected to be roughly 25 tons.
4. It is expected that the isolated fissile plutonium will be recycled in thermal and fast reactors, most of it being incorporated into MOX fuel for use in light-water reactors.
5. There are at present MOX fuel fabrication plants at six locations in the world. In 1990 they had an annual fabrication capacity of 95 tons and required about 4 tons of fissile plutonium per annum, and it is expected that in the year 2000 they will have an annual fabrication capacity of 430 tons and require about 19 tons of fissile plutonium per annum.
6. In 1990, less than 30% of the amount of fissile plutonium isolated by reprocessing was incorporated into reactor fuel. In the year 2000, the figure will probably be around 75%. It is expected that this imbalance between fissile plutonium production on one hand and the demand for fissile plutonium for fuel fabrication on the other will, during the period 1990 to 2000, result in the stockpiling of 110 tonnes of fissile plutonium. In addition, the news media are carrying reports about 150 tons of fissile plutonium already stockpiled in Europe.
7. In addition to this excess of civil plutonium, attention is now also focussing on the large amounts of fissile material in the nuclear warheads being dismantled in the former Soviet Union and in the United States - quoted at 200 to 250 tons of fissile plutonium and 1200 to 1450 tons of highly enriched uranium.

8. Even if one disregards this fissile material from nuclear warheads, the excess of isolated fissile plutonium from civilian nuclear programmes poses a major - worldwide - political problem. Although plutonium from power reactors tends to be impure - containing significant amounts of non-fissile isotopes - and not ideal for nuclear weapons fabrication, it can nevertheless be used for this purpose.

9. The accumulation of isolated plutonium could be avoided by increasing its use in reactor fuel (for example, in MOX fuel) or by reducing its production as a result of reprocessing. In this context, it may be noted that in a document entitled "Nuclear Fuel Recycling in Japan" the Japanese Advisory Committee on Nuclear Fuel Recycling has stated that "it is a national principle that Japan will not process plutonium beyond the amount required to implement nuclear fuel recycling programmes". I welcome this statement.

10. From a security point of view, isolated plutonium is probably best kept in reactors - being used in the reactor fuel. Given the current availability of very low-cost uranium for reactor fuel, there would appear to be no incentive to invest in additional facilities for the use of plutonium in commercial power generation. The use of plutonium in this way does, however, help to promote technical development and contribute to energy self-sufficiency. The situation just outlined is likely to persist into the next century.

11. Other options are to store or dispose of plutonium. As regards storage, the IAEA carried out an intensive International Plutonium Storage (IPS) study during the period 1978 to 1984. However, the IPS study did not lead to a consensus among the participating IAEA Member States.

12. The situation regarding plutonium has changed drastically since then, but many findings of the IPS study are still useful. Placing the plutonium in a given country under an IPS regime, thus creating greater transparency, might lead to greater understanding in neighbouring countries for the uses to which the plutonium is ultimately to be put.

13. Decisions are urgently needed regarding the future use and/or disposition of plutonium. As a result of nuclear fuel reprocessing, and potentially as a result also of nuclear weapons dismantling, in the foreseeable future the supply of plutonium will far exceed the capacity to absorb plutonium into peaceful, commercial nuclear industrial activities.

14. The IAEA is ready to (a) offer an international forum for the exchange of information on this important subject and (b) participate in organizing the international storage or disposition of plutonium at the request of Member States - including Member States wishing to place their plutonium under an "international umbrella" for political reasons.

[MEMO]

[MEMO]

Friday, April 10

SESSION 5 13:30-17:30

WHAT DOES THE PUBLIC WANT TO KNOW ABOUT NUCLEAR INFORMATION?

The general public does not necessary think that information on nuclear energy is disclosed and provided enough in Japan. This is one of the factors leading to public opposition of nuclear energy. How to bridge the gap between the nuclear organizations and the public with regard to provision of nuclear information is a problem which has to be solved. Today nuclear power plays a vital role in the electricity supply of Japan. This session will try to clarify how the public regards the present situation about the transfer of nuclear information, and what are the problems of the present system, to have discussions over what are the disclosures and giving information which is expected by society. Experience in other countries including the USA will be referred to.

Discussion with the Audience

FAREWELL RECEPTION 17:30 - 18:45

**BALLROOM, YOKOHAMA GRAND INTER CONTINENTAL HOTEL, 3F
PACIFICO YOKOHAMA**

[MEMO]

[MEMO]

Member List of the Program Committee
for the 25th JAIF Annual Conference

(In Alphabetical Order)

Chairman Takemochi Ishii
 Professor
 Keio University

Members Michiko Abe
 Section Head of 4th Laboratory
 Division of Environmental Health
 National Institute of Radiological Sciences
 Science and Technology Agency

 Mamoru Akiyama
 Professor
 University of Tokyo

 Kunio Higashi
 Professor
 Kyoto University

 Hirotada Hirose
 Professor
 Tokyo Woman's Christian University

 Takao Ishiwatari
 President
 Power Reactor and Nuclear Fuel Development
 Corporation

 Hiroko Kofuji
 Leader
 Women's Association for Studying Energy and Nature

 Atsushi Mano
 President
 Nuclear Fuel Industries, Ltd.

 Hiroshi Murata
 President
 Japan Atomic Energy Relations Organization
 Vice Chairman
 Japan Atomic Industrial Forum, Inc

 Keiko Nakamura
 Professor
 Waseda University

 Kiyoshi Nozawa
 Vice Chairman
 Japan Nuclear Fuel Service Co. Ltd.
 Vice Chairman
 Japan Nuclear Fuel Industries Co. Ltd.

Kenjiro Ogata
Adviser to the President
Bank of Tokyo

Shiro Sasaki
Managing Director
Tokyo Electric Power Co, Inc.

Takamitsu Sawa
Professor
Kyoto University

Yoichi Shimizu
Editorial Writer
Mainichi Newspapers

Mamoru Sueda
Executive Director
Committee for Energy Policy Promotion

Yoshihiko Sumi
Senior Managing Director
Kansai Electric Power Co.

Yukio Suzuki
Professor
Yokohama National University

Isamu Takagi
Executive Director
Federation of Electric Power Companies

Shun-ichi Takebe
Editorial Writer
Asahi Shimbun

Yasumasa Yahagi
Senior Vice President
Toshiba Corporation
Chairman
Nuclear Energy Policy Planning Committee
Japan Electrical Manufacturers' Association

Observers

Kinju Atarashi
Deputy Director-General
Atomic Energy Bureau
Science and Technology Agency

Shigeo Suehiro
Deputy Director-General
Agency of Natural Resources and Energy
Ministry of International Trade and Industry

Masaaki Konishi
Deputy Director-General
United Nations Bureau
Ministry of Foreign Affairs

**BRIEF PERSONAL HISTORY
OF
CHAIRMEN, SPEAKERS, AND PANELISTS**

OPENING SESSION



CHAIRMAN

Kohei ABE

Date of Birth: December 8, 1923

Education: 1949 Graduated from Kyoto University

Career:

1949 Chubu Electric Distribution Co., Ltd.

1951 Chubu Electric Power Co., Inc.

1979 Director

1981 Director and General Manager of Gifu Regional Office

1983 Managing Director

1985 Director

1989 Executive Vice President and Director

1991- President and Director, Chubu Electric Power Co., Inc.

Directorship:

1985-89 Executive Director, Federation of Electric Power Companies

1991- Vice Chairman, Chubu Economic Federation



Takemochi ISHII

Date/Place of Birth: July 26, 1930 in Osaka

Education:

1954 Graduated from Faculty of Medicine, the University of Tokyo

1955 Obtained Medical Doctor License

1957 Graduated from Faculty of Engineering, the University of Tokyo

1963 Doctorate Degree in Engineering, the University of Tokyo

Career:

1957-58 Staff, Heavy Industries Bureau, Ministry of International Trade and Industry (MITI)

1964 Associate Professor, Faculty of Engineering, the Univ. of Tokyo

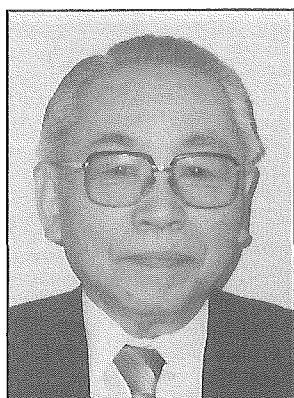
1973 Professor, Faculty of Engineering, the University of Tokyo

1988 Visiting Professor, Tokyo Women's Medical College

1991- Professor Emeritus, the University of Tokyo

Professor, Faculty of Environmental Information, Keio University

Award: Award for Personal Contribution on "Telecommunications Season", Minitser of Posts and Telecommunications (1990); Award for Distinguished Service of Science and Technology, The Metropolitan of Tokyo etc.



Takashi MUKAIBO

Date of Birth: March 24, 1917

Education: 1939 B.S. in Engineering, the University of Tokyo; 1954

Ph.D. in Engineering in Electrochemistry, the same university

Career:

1954-58 Science Attache, Embassy of Japan, U.S.A.

1959-77 Professor of the University of Tokyo (Electrochemistry)

1968-69 Dean, the Faculty of Engineering, the University of Tokyo

1977-81 President, the University of Tokyo

1981-91 Acting Chairman, Japan Atomic Energy Commission

1983- President, Japan Association of Engineering Education

1985- President, Japan Society for Science Policy & Research Management

1989- President, Engineering Academy of Japan

1992- Chairman, Japan Atomic Industrial Forum, Inc.

Award: Order of Gorkha Dakshin Bahu, First Class, His Majesty a Government of Nepal(1977); Ordem Nacional do Cruzeiro do Sul, Brasil (1982); The Henry Dowolf Smyth Nuclear Statesman Award, ANS and AIF(1984); Ordem de rio Branco (Grande Official), Brasil (1988); The First Class Order of the Sacred Treasure (1989) etc.



Kanzo TANIGAWA

Date of birth: June 24, 1920

Place of birth: Kouchi, Japan

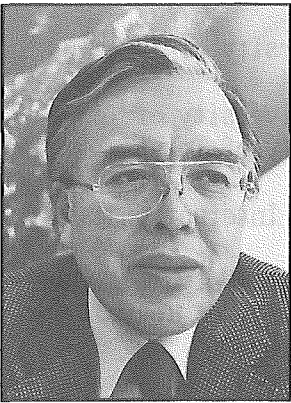
Education: 1943 Graduated from the University of Tokyo, Faculty of Law

Career:

- 1970 Director-General, Customs and Tariff Bureau, Minister of Finance
- 1976 Elected to the House of Representatives
- 1980 Elected to the House of Councillors
- 1983 Chairperson, Committee on Agriculture, Forestry & Fisheries(H.C.)
- 1986 Director, Science & Technology Division,
Policy Research Council(LDP)
- 1987 Chairperson, Committee on Local Administration (H.C.)
- 1989 Member, Special Committee on Science and Technology (H.C.)

Present position:

State Minister for Science and Technology; Member of the H.C.(elected twice); Member of the Council for Science and Technology; Chairperson of the Atomic Energy Commission; Chairperson of the Space Activities Commission



Toshibumi SAKATA

He received his B.S. degree of chemical engineering from Chiba University in 1957. He took Doctor of Engineering of Chemical Physics at the University of Tokyo and then joined the Institute of Industrial Science there, as a research associate. He has worked Imaging Systems and Materials, during that period from 1964 to 1966, he stayed the Institute of Physical Chemistry of Munich University as a research scientist of professor G. M. Schwab. In 1966 he moved to Tokai University, becoming Associate Professor, and he had a chair of professor in 1971. He is director of Tokai University Research and Information Center. Also, Director of Research Coordination department of General Research Organization of Tokai University. His present activity is in the field of Imaging science, as it applies to the information and communication through imaging system, and Remote Sensing technology by Satellite in Space. At present, the chairman of research committee of the society of Electrophotography of Japan, Committee member of Imaging Science and Engineering Conference, the society of Photographic Science and engineering of Japan, the society of electrophotography of Japan, SPSE Tokyo Chapter, the general chairman of 1977 Tokyo symposium of SPSE.

SESSION 1



CHAIRMAN

Takao ISHIWATARI

Date of birth: January 1, 1927 Place of birth: Tokyo, Japan
Education: 1951 Graduated from the Dept. of Metallurgy, the Faculty of Engineering, the University of Tokyo

Career:

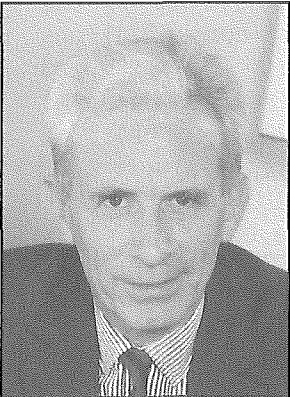
- 1952 Joined the Ministry of International Trade and Industry (MITI)
- 1967 Director of Technology Research and information Division, General Coordination Department, Agency of Industrial Science and Technology, MITI
- 1974 Director of Promotion Division, Promotion Bureau, STA
- 1976 Assistant Director-General of Minister's Secretariat, STA
- 1978 Assistant Director-General of Minister's Secretariat, Environment Agency
- 1979 Director-General of Atomic Energy Bureau, STA
- 1982 Deputy Minister for Science and Technology, STA
- 1983 Vice Minister for Science and Technology, STA
- 1984 Executive Vice President, Power Reactor & Nuclear Fuel Development Corporation (PNC)
- 1989- President, PNC

Philippe ROUVILLOIS

Date/Place of Birth: January 29, 1935 in Saumur, France

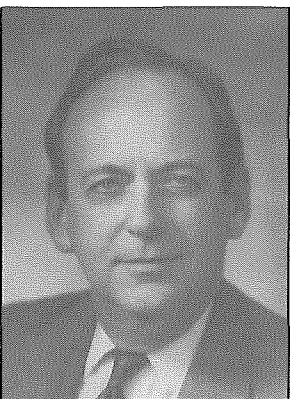
Career milestones:

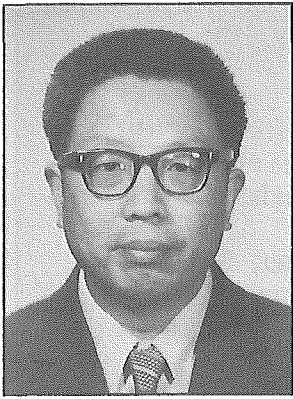
- Jul.1989- Administrateur-General of the Commissariat à l'Energie Atomique and Chairman of CEA-Industrie
- 1988-89 Inspector General of the Finance Ministry
- 1978-88 President of SNCF(the French National Rail System)
- 1983-87 Deputy General Manager of SNCF, in charge of budget control, finances and supervision of subsidiary companies
- 1982-83 Inspector General of the Finance Ministry
- 1976-82 Director General of the Internal Revenue Service
- 1964 Tech.Adviser to Mr.Michel DEBRE, Economy & Finance Minister
- 1957-59 Ecole National d'Administration ("Vauban" Class)
- 1955-57 Reserve Officer Training School in Saumur, France. Served in Germany and Algeria
- 1951-54 Institut d'Etudes Politiques (Paris) and Law School



Ivan SELIN

On July 1, 1991, Ivan Selin became Chairman of the Nuclear Regulatory Commission, the federal agency responsible for regulating all safety and environmental aspects of the civilian use of atomic energy. Previously he was Under Secretary of State for Management from May 23, 1989 to June 30, 1991. Prior to joining the State Department, he was the chairman of the board of American Management Systems, Inc., a computer systems, services, and consulting firm. From 1965 to 1970, he served in the office of the Assistant Secretary of Defense (Systems Analysis); he acted as the Assistant Secretary at the end of that period. From 1960 to 1965, he was a research engineer at the RAND Corporation. He has served as chairman of the Military Economic Advisory Panel to the Director of Central Intelligence (1979-89); member (1978-89) and chairman (1988-89) of the Board of Governors of the United Nations Association-USA; member of the Advisory Board on the USSR and Eastern Europe at the National Academy of Sciences (1986-88); and member of the Council on Foreign Relations (1979-). In 1960, He received a Ph.D. from Yale Univ. in electrical engineering. In 1962 he received a Dr. es Sciences degree from the Univ. of Paris in mathematics.





MIN Yaozhong

Date/Place of Birth: September 5, 1935, Shanghai, China

Education: 1960 Graduated from Moscow Institute of Nonferrous Metal and Gold

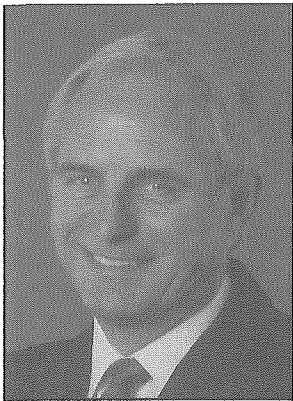
History of Employment:

1960 Deputy Director & Chief Engineer, Senior Engineer (Technical Management), Uranium Mine in Jiangxi

1983 Director (Technical Management), Bureau of Uranium Mining and Metallurgy, Jiangxi, Ministry of Nuclear Industry

1984 Director(Technical Management), Bureau of Uranium Mining and Metallurgy, Ministry of Nuclear Industry

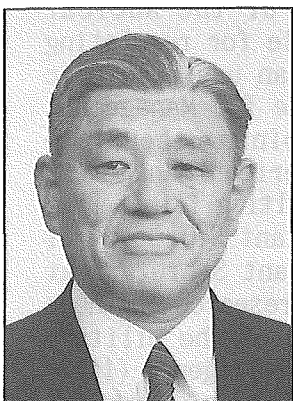
1988- Assistant President(Technical Management), China National Nuclear Corporation



Phillip BAYNE

Phillip Bayne is president and chief executive officer of the U.S.Council for Energy Awareness (USCEA), the public communications organization for the commercial nuclear power industry. He was named to USCEA's highest staff position by the Board of Directors in April 1991. Previously, he was president and chief operating officer of the New York Power Authority (NYPA). NYPA is the nation's largest non-federal public-power organization and New York State's largest electricity supplier. While president of NYPA, he chaired a task force of the Nuclear Power Oversight Committee(NPOC)-the nuclear industry's policy-setting organization-that developed a strategic plan for building new nuclear power plants. In addition, he served on the Department of Energy's Advisory Committee on Nuclear Facility Safety. A former Navy captain, he graduated with distinction from the U.S. Naval Academy in 1954. He later graduated from the Naval War College, earned a master's degree in international affairs at George Washington University, and participated in Harvard Business School's Advanced Management Program. He commanded a nuclear submarine, a submarine tender, and a division of nuclear submarines.

SESSION 1



Joichi AOI

Date of Birth: March 30, 1926

Education: 1948 Graduated from the Faculty of Electrical Engineering, the University of Tokyo

Career:

Apr.1948 Joined Toshiba Corporation

Sep.1965 Manager, Power System Engineering Section, Electric Power Engineering Department, Heavy Apparatus Division

Aug.1970 Chief Engineer, Heavy Apparatus Division

Jul.1975 Assistant General Manager, Atomic Power Division

Jun.1978 Director & Assistant Group Executive, Nuclear Energy Group

May 1980 Director & Group Executive Nuclear Energy Group

Jun.1981 Managing Director & Sector Executive Heavy Duty Electrical Business Sector

Jun.1982 Senior Managing Director & Sector Executive, Heavy Duty Electrical Business Sector

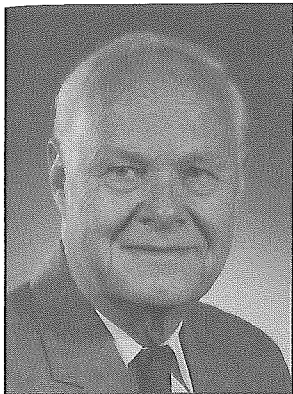
Jun.1984 Executive Vice President

Jul.1987- President and Chief Executive Officer

Award: Medal with Blue Ribbon, Japanese Government (April 29,1990)

CHAIRMAN

W. Kenneth DAVIS



W. Kenneth Davis served as the U.S. Deputy Secretary of Energy from 1981 to 1983. He is a Past Chairman of the U.S. Committee for the World Energy Council (U.S. Energy Association) and is Chairman of the Programme Committee of the World Energy Council. He is a Director of the Atlantic Council of the U.S. He also serves as a consultant on management and engineering to several government and private organizations including Bechtel. He has been Professor of Chemical Engineering (Adjunct) at the University of California, Los Angeles and a Director of the Management Analysis Company.

He served as a corporate vice president of Bechtel from 1958 to 1981. Prior to that he served as Deputy Director, 1954, and then Director of Reactor Development of the U.S. Atomic Energy Commission, 1955-58.

He served as Chairman/President of the Atomic Industrial Forum, 1964-67, as President of the American Institute of Chemical Engineers in 1981, and as Vice President of the National Academy of Engineering, 1978-81, is a Fellow and Former Director of the American Nuclear Society. He received B.S. and M.S. degrees from MIT in Chemical Engineering in 1940 and 1942.

Masayoshi HAYASHI



Date of Birth: May 12, 1922

Education: 1946 Graduated from Nagoya University (Department of Electrical Engineering)

Career:

1946 Entered Chubu Electric Power Generation & Transmission Corp., Inc.
1951 Entered Chubu Electric Power Co., Inc. (CHUBU) (due to Organization change)

1972 General Manager of Power System Operations Department, CHUBU

1977 Director, CHUBU

1979 Executive Director, CHUBU

1981 Executive Vice-President, CHUBU

1986 Senior Adviser, CHUBU

1986 President, Power Reactor and Nuclear Fuel Development Corp. (PNC)

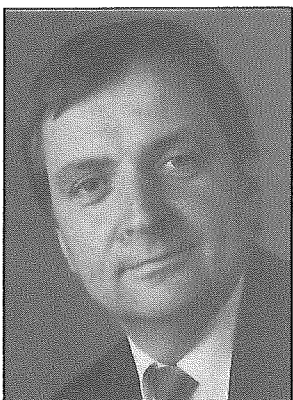
1989- Commissioner, Atomic Energy Commission

1989- Counsellor, PNC

1989- Chairman, New Energy and Industrial Technology Development Organization (NEDO)

Others: A Member of Advisory Committee for Energy etc.

Klaus TOEPFER



Date of Birth: July 29, 1938 in Germany

Education: 1960-64 Studied economics at the universities of Mainz, Frankfurt and Muenster.

Career:

1971 Director, Planning and Information Bureau, Chancery of the State of Saarland

1972 Joined Christian Democratic Party (CDU)

1978 Professor, University of Hanover

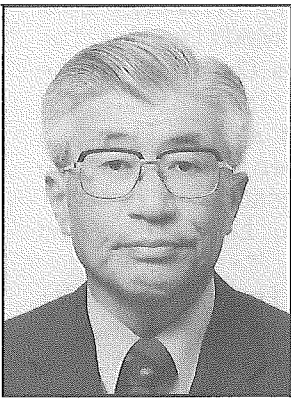
1978-85 Secretary of State, Ministry for Social Affairs, Health and Environment, State of Rheinland-Pfalz

1985-86 Honorary Professor, University of Mainz

1985-87 Minister for Environment and Health, State of Rheinland-Pfalz

1987- German Federal Minister for the Environment, Nature Conservation and Reactor Safety

SESSION 2



CHAIRMAN

Yasumasa TOGO

Date of Birth: February 17, 1928

Education: 1951 Graduated from Electrical Engineering Department
the University of Tokyo.

1956 Finished post-graduate course of the same department

Career:

1956-62 Worked at Japan Atomic Energy Research Institute (JAERI) on
JPDR Project

1962 Associated Professor, Nuclear Engineering Department,
the University of Tokyo

1969-89 Professor, Nuclear Engineering Department,
the University of Tokyo

1989- Deputy Chairman, Nuclear Safety Commission

Teiichi YAMAMOTO

Date of Birth: February 16, 1938

Education: 1961 Graduated from Faculty of Law, the University of Tokyo

Career:

1961 Joined Ministry of International Trade and Industry (MITI)

1981 Director-General, Policy Planning Department, New Energy
Development Organization

1983 Director, Economic Cooperation Division, Economic Cooperation
Department, International Trade Policy Bureau, MITI

1984 Director, Planning Division, Public Utilities Department,
Agency of Natural Resources and Energy (ANRI), MITI

1985 Director, General Coordination Division, Director-General's
Secretariat, ANRI, MITI

1987 Director-General, General Coordination Department, Agency of
Industrial Science and Technology

1989 Director-General for Commercial Affairs, Industrial Policy Bureau

1990 Director-General, Atomic Energy Bureau, Science & Technology
Agency

1991- Director-General, Agency of Natural Resources and Energy



Adolf BIRKHOFFER

Date/Place of Birth: February 23, 1934 in Munich, Germany

Education: Study of Electrical Engineering (Communication Engineering),
Institute of Technology, Munich, 1953-1958; Study of Theoretical
Physics, University of Innsbruck (Austria), 1958-1961; (Doctor's
Degree: Dr.phil.), 1964

Career:

1963- Research activities in the field of Reactor Dynamics and
Reactor Safety at the Technical University of Munich

1967 Habilitation at the Department of Mechanical and Electrical
Engineering of the Technical University of Munich,
Venia Legendi Control Technology

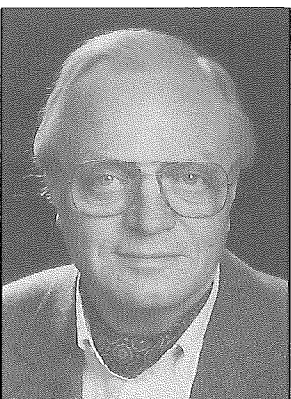
1971 Call to the chair of Reactor Dynamics and Reactor Safety at
the Technical University of Munich;
full professor (Ordinarius) since 1975

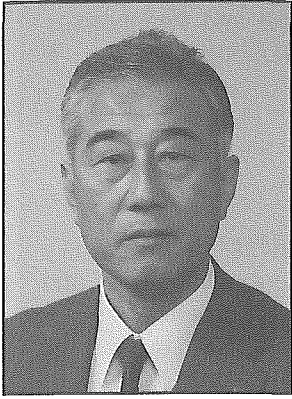
1977- Managing Director of the Gesellschaft für Reactorsicherheit (GRS)

Memberships: Reactor Safety Commission (RSK) of the F.R.Germany;

Committee on the Safety of Nuclear Installations (CSNI) of the OECD;

INSAG of the IAEA



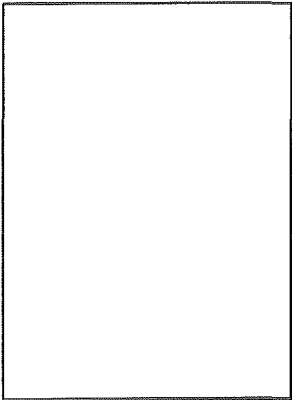


Michio ISHIKAWA

Date/Place of Birth: March 2, 1934 in Kagawa Prefecture
Education: 1956 Graduated from Mechanical Engineering Dept.,
the University of Tokyo. Obtained Doctorate Degree in Engineering.

Career:

Nov.1957 Joined Japan Atomic Energy Research Institute (JAERI)
Sep.1975 Head of Reactivity Accident Laboratory, Department of
Safety Engineering, JAERI
Apr.1983 General Manager, Dept. of Safety Analysis
Apr.1985 General Manager, Dept. of JPDR
Dec.1988 General Manager, Dept. of Nuclear Safety Research Center
Apr.1989 Deputy Director General, Tokai Research Establishment, JAERI
Dec.1989 Special Researcher, Tokai Research Establishment, JAERI
Mar.1991- Professor, Faculty of Engineering, Hokkaido University
Committees: 1984- Member, Special Committee of Nuclear Safety
Commission, Science & Technology Agency; Technical Advisor for Nuclear
Generation, Ministry of International Trade and Industry etc. 1987-
Member of NUSSAG, IAEA.



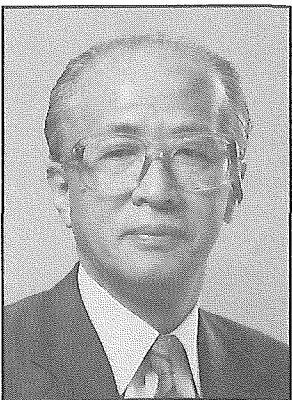
Chang-Saeng RIM

Date/Place of Birth: November 21, 1940 in Andong, Korea
Education:

1959-63 Studied Nuclear Engineering, Seoul National University
1966 M.S.Degree, Massachusetts Institute of Technology
1969 Sc. D., Massachusetts Institute of Technology

Employment Record:

1982-85 Director of Nuclear Fuel Division of Korea Atomic Energy
Research Institute (KAERI)
1985-87 Vice President of Nuclear Power Projects of KAERI
1987-90 Senior Vice President of KAERI
1990-91 President of The 2nd KAERI
1991- President of KAERI

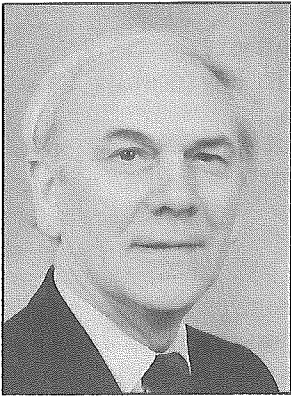


Shiro SASAKI

Date of Birth: March 23, 1928
Academic Career: 1953 B.S(Electrical Engineering), Faculty of
Engineering, The University of Tokyo

Career:

1953 Joined The Tokyo Electric Power Co, Inc.
1972 Assistant Superintendent, Fukushima Nuclear Power Station
1980 General Manager, Nuclear Power Operation and Maintenance Dept.
1985 Director, Nuclear
1991- Managing Director, Nuclear Power
The Tokyo Electric Power Co, Inc.



Edward James VARNEY

Date/Place of Birth: December 14 1934 in London, England

Education: Alleynes Grammar School, Stone, Staffordshire and Manchester University. Bsc Mechanical Engineering, 1st Class Honours C. Eng. M I Mech E.

Career:

1952-58 Engineering Student Apprentice, Royal Ordnance Factory, Swynnerton, Staffordshire.

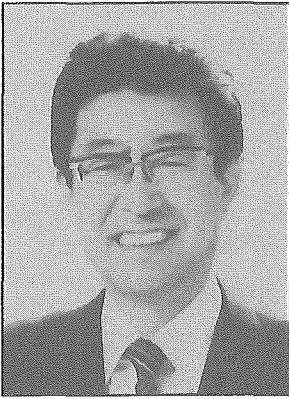
1960-63 Short Service Commission, Royal Navy.

1963-71 Engineer in the Nuclear Operations Branch, Central Electricity Generating Board. Work associated with the commissioning and operation of Magnox nuclear power stations.

1971- Various posts in HM Nuclear Installations Inspectorate, Nuclear Safety Division, Health and Safety Executive

Present- Deputy Chief Inspector and head of a Branch concerned with the licensing of sites belonging to British Nuclear Fuels, United Kingdom Atomic Energy Authority, Amersham International, Research Reactors and various sites connected with the Ministry of Defence.

LUNCHEON



Kozo WATANABE

Date of Birth: May 24, 1932 Place of Birth: Fukushima Prefecture
Education: 1955 Graduated from Waseda University; 1957 Graduated from
Waseda University Graduate School (Political Science)

Career:

- 1969 First elected to the House of Representatives
- 1974 Parliamentary Vice-Minister of International Trade and Industry
- 1976 Parliamentary Vice-Minister of Education
- 1978 Director, Commerce & Industry Division, Liberal Democratic Party
- 1981 Chairman, Committee on Commerce and Industry (House of Rep.)
- 1983 Minister of Health and Welfare
- 1986 Chairman, Research Commission on Parliamentary Reform,
Liberal Democratic Party (LDP)
- 1987 Chairman, Research Commission on Electric Power Development, LDP
- 1989 Minister of Home Affairs / Chairman, National Public Safety
Commission
- 1990 Chairman, Research Commission on Petroleum, LDP
- 1991 Chairman, Budget Committee (House of Rep.)
- 1991 Minister of International Trade and Industry

Jun-ichi NISHIZAWA

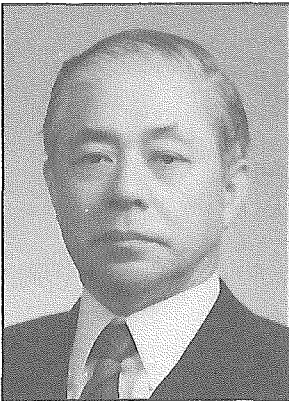
Date/Place of Birth: September 12, 1926, in Sendai, Japan

Education:

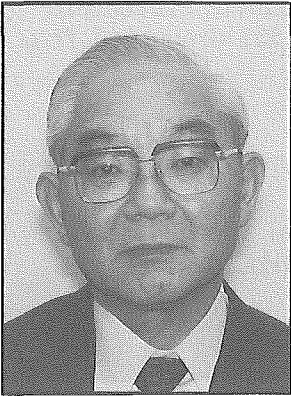
- 1948 Graduated from Faculty of Engineering, Tohoku University
- 1960 Doctor of Engineering, Tohoku University

Professional:

- 1954-62 Assistant Professor, Tohoku University and
Member of the Research Institute of Electrical Communication,
Tohoku University
- 1962-90 Professor of Tohoku University, directing research in the 3rd
(1962-75) and the 20th Department (1975-) of the Research
Institute of Electrical Communication
- 1983-86 Director of the Research Institute of Electrical Communication,
Tohoku University
- 1989-90 Director of the Research Institute of Electrical Communication,
Tohoku University
- 1990- Emeritus Professor of Tohoku University
- 1990- President of Tohoku University



SESSION 3



CHAIRMAN

Ryukichi IMAI

Date/Place of Birth: February 16, 1929 in Tokyo, Japan
Education: 1952 Graduated from the University of Tokyo (Dept. of Science)
1954 B.A. Principia College (Illinois)
1955 M.A. Fletcher School of Law and Diplomacy
1956 A.M. Harvard University, Graduate School of Arts and Sciences
1974 Doctor of Engineering, The University of Tokyo

Career:

1956 Joined Asahi Newspaper, Tokyo
1958 Joined Japan Atomic Power Company
1976 General Manager for Engineering, Japan Atomic Power Company
1980 Ambassador Extraordinary and Plenipotentiary;
Ambassador of Japan to Kuwait
1982 Permanent Representative of Japan to the Conference on
Disarmament (Geneva)
1987 Ambassador Extraordinary and Plenipotentiary;
Ambassador of Japan to Mexico
Present: Senior Counsellor Advisor, Japan Atomic Industrial Forum Inc.;
Member, United Nations Advisory Board on Disarmament etc.

José Luiz de Santana CARVALHO

Date/Place of Birth: September 24, 1950 in Rio de Janeiro

Graduation:

1973 Bachelor of Science, University of California, Chemistry
1977 Master of Science, Purdue University, Chemistry
1982 Philosophy Doctor- Michigan State University
Business Administration graduation in *latu sensu*
1983 Pontificia University Catolica do Rio de Janeiro

Professional:

1984-85 Head of Metrology of Radionuclides of Brazilian Nuclear Energy
Commission (BNEC)
1984-85 Scientific Advisor to the President of BNEC
1985 Head of Energy Division of Ministry of Science and Technology
1985-86 Head of Dept. to Infrastructure & Engineering General Secretary
of Ministry for Housing, Urbanization and Environment
1986 Professor, Universidade Federal do Rio de Janeiro
1987-88 Acting Minister of Ministry for Housing, Urbanization
and Environment
1990- President of Brazilian Nuclear Energy Commission

Hubert de La FORTELLE

Date/Place of Birth: February 28, 1942 in Paris

1991- Plenipotentiary Minister

Director, International Relations Division at the Commissariat à
l'Energie Atomique
Governor, representing France on the Board of the International
Atomic Energy Agency

Career Milestones:

1987-91 Ambassador to the Republic of Korea
1986-87 Chargé de mission with Mr. André Giraud, Minister of Defense
1984-86 Minister-Counsellor at the French Embassy in Bonn, Germany
1981-84 First Counsellor at the French Embassy in Bonn, Germany
1980-81 Diplomatic Adviser to the Prime Minister
1978-80 Charge de mission with the Prime Minister
1975-78 Counsellor at the French Embassy in The Hague, the Netherlands
1974-75 Technical Adviser to Mr. Jean Sauvagnargues, Foreign Minister
1973 Technical Adviser to Mr. Michel Jobart, Foreign Minister
Education: Ecole Nationale d'Administration, Class of 1967





William J. DIRCKS

Date/Place of Birth: September 20, 1929 in New York City

1988 Deputy Director General, Head of the Department of Administration, at the International Atomic Energy Agency in Vienna, Austria.

1986-87 Executive Vice President and then as President of the Atomic Industrial Forum, the association of the nuclear industry.

Before joining the AIF, He served as Executive Director for Operations, U.S. Nuclear Regulatory Commission (NRC). He was appointed Acting Executive Director in February 1980 and was named Executive Director in September 1980. From January 1978 until 1980, he was Director, Office of Nuclear Material Safety and Safeguards for the NRC. He joined the NRC in April 1975 and served as Deputy Executive Director prior to assuming this position.

He received his bachelor of science degree in economics in 1951 from Fordham University in New York City, was granted the masters of arts degree in economics in 1958 from Clark University, Worcester, Massachusetts, and did pre-doctoral studies in economics from 1959-60 at the University of California, Berkely.

Tetsuya Endo

Date of Birth: February 19, 1935

Education: The University of Tokyo, Faculty of Law

Career:

1958 Joined Ministry of Foreign Affairs

1958-60 Studies at Depauw University & Princeton University (U.S.A.)

1973-75 Director, South Asia Division, Asian Affairs Bureau

1975-77 Director, Korea Division, Asian Affairs Bureau

1977-79 Counsellor, Embassy of Japan in the U.K. (Research Associate, International Institute for Strategic Studies)

1979-81 Minister, Embassy of Japan in Mexico

1981-83 Assistant Director-General, United Nations Bureau

1983-85 Deputy Director-General, United Nations Bureau

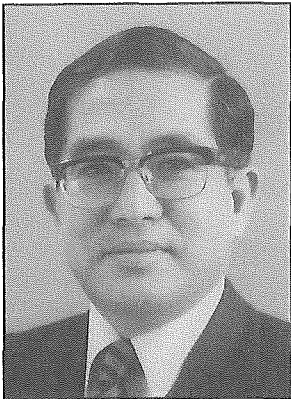
1985-87 Consul-General of Japan in Honolulu, Hawaii (U.S.A.)

1987-89 Director-General for Scientific and Technological Affairs

1989-92 Governor, Board of Governors, IAEA

1990-92 Ambassador Extraordinary and Plenipotentiary

Permanent Mission of Japan to the International Organizations in Vienna (Austria)

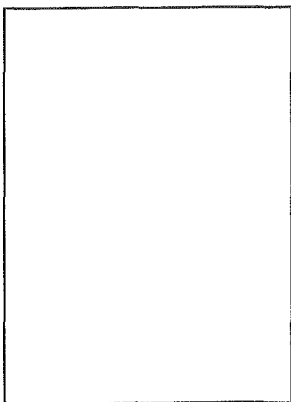


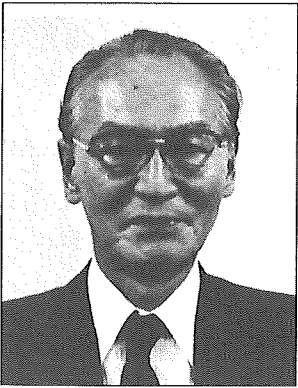
Bradley Gordon

Mr. Bradley Gordon is Assistant Director of the US Arms Control and Disarmament Agency for Nuclear and Weapons Control. He is responsible for issues related to nuclear, missile, and chemical non-proliferation, as well as for arms transfers, programs on safeguards, and economic assessments of arms proliferation and control. He was appointed Ambassador and Alternate Head of the US Delegation to the Fourth Review Conference of the Treaty on the NPT.

1987-89 Legislative Assistant to Senator Rudy Boschwitz for foreign policy and defense matters and the personal representative of the Senator to the Senate's Committee on Foreign Relations; 1985-87 Professional Staff Member of the Committee on Foreign Relations, responsible for the Near East and South Asia; 1979-1985 Political analyst at the Central Intelligence Agency in the Office of Near Eastern and South Asian Analysis.

He received a Master of Arts degree in political science in 1974 from the University of Vermont. He received a Master of Philosophy degree from Columbia University in 1978 (PhD.a.b.d.) and a Certificate from its Middle East Institute in 1977.





CHAIRMAN

Hiroshi MURATA

Date of Birth: Mar.10, 1915

Education: 1937 Graduated from Mechanical Course, Ryojun (Port Arthur) Institute of Technology

Career:

- 1958 First Secretary, Embassy of Japan in U.K.
- 1963 Director General, Resources Bureau, Science and Technology Agency (STA)
- 1964 Director General, Planning Bureau, STA
- 1964 Director General, Atomic Energy Bureau, STA
- 1967 Executive Director, Power Reactor and Nuclear Fuel Development Corporation (PNC)

1978 President, Japan Atomic Energy Research Institute (JAERI)

1981 President, Nuclear Safety Research Association

1983 President, Nuclear Safety Technology Center

1987- President, Japan Atomic Energy Relations Organization

Other Major Positions: Vice Chairman, Japan Atomic Industrial Forum Inc. (JAIF); Chairman of the Steering Committee, International Nuclear Cooperation Center, JAIF; Special Adviser, JAERI etc.

Hiroto ISHIDA

Date/Place of Birth: September 16, 1941, in Ishikawa Prefecture

1964 Bachelor of Engineering, the University of Tokyo

1964 Joined Science and Technology Agency (STA)

1977 Secretary to the Minister of state for S&T

1979 Director for Policy Research, Planning Bureau, STA

1982 Counsellor, Embassy of Japan in USA

1985 Director, Nuclear Fuel Div., Atomic Energy Bureau (AEB), STA

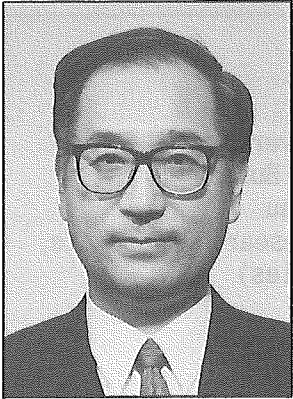
1987 Director, Policy Div., AEB/STA

1988 Director, Finance Div., Minister's Secretariat, STA

1989 Deputy Director General, Minister's Secretariat, STA

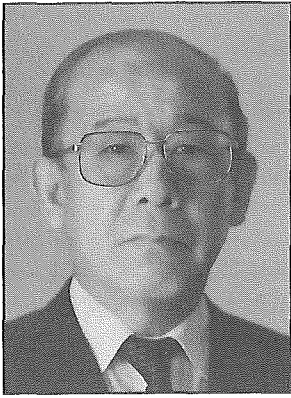
1990 Deputy Director General, AEB/STA

1991- Director General, AEB/STA



L. Neville CHAMBERLAIN

Mr. Chamberlain read physics at Kings' College, Durham University, England. He graduated in 1961 but continued for a further year at Durham and received an MSc, also in Physics in 1962. On leaving the University he joined the Atomic Energy project at the United Kingdom Atomic Energy Authority's Springfields' Factory where he worked in the Health Physics Dept. In 1967 he transferred on promotion to the R & D Dept. at the UKAEA's Capenhurst enrichment plant. He was subsequently seconded to the the then newly formed Urenco Organization, established as a joint venture between UK/Germany/Holland to build centrifuges enrichment plants and to market their products. In 1977 he returned to Springfield, which was then part of British Nuclear Fuels Ltd. (BNFL), as Works Manager, where he made a major contribution in leading a project to refurbish the Magnox Fuel Plants. After further experience on the technical policy and commercial side of Enrichment Div. he was appointed to the position of Director, Enrichment Div. in 1984. Two years later he was appointed Chief Executive of BNFL. He received an Honorary DSc from Salford University in 1989 and the CBE in January 1990.



Kozo IIDA

Date of Birth: April 23, 1923

Education: 1946 Graduated from the University of Tokyo (Electrical Engineering)

Career:

Jan.1947 Entered the Kansai Electric Power Distribution Co.

May 1951 The company name was changed to the Kansai Electric Power Co.,Inc. Was continuously on the staff.

Nov.1966 Chief of Hokuriku Branch Office

May 1968 Manager of System Engineering Department

May 1970 General Manager

May 1972 Director

Jun.1977 Managing Director

Jun.1979 Senior Managing Director

Jun.1983 Director and Executive Vice President,
the Kansai Electric Power Co., Inc.

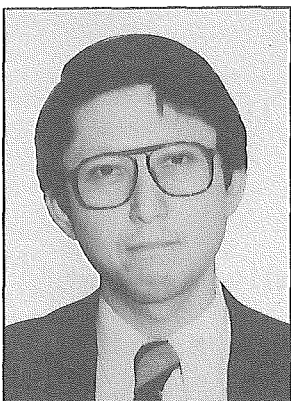


Thomas L. NEFF

Dr. Neff is a Senior Member of the Center for International Studies at the MIT. For fifteen years, he has conducted research at MIT on international industries and markets in oil and nuclear and on technology policy, including technical and economic issues relating to arms control and nonproliferation. From 1977 to 1985, he was Director of MIT's International Energy Studies Program, Supervising interdisciplinary research in economic, finance, political science and engineering.

In the U.S., he has served as an advisor on energy and national security issues to the Department of State, etc. He has also served as an advisor on energy markets trade policy and negotiations, project finance, and business strategy to senior management in more than thirty companies in Europe, Aisa, the Middle East, North America, and Latin America. He is the President of Resources Strategy Associates Inc., a firm specializing in international energy markets, trade, and corporate strategy issues.

He completed his Ph.D in Physics at Stanford University in 1972, and subsequently conducted research at Lawrence Berkeley Laboratory, Stanford and MIT.



Atsuyuki SUZUKI

Born in Tokyo on October 31, 1942.

Career:

1985- Professor, Dept. of Nuclear Engineering, University of Tokyo

1977 Associate Professor, Ditto,

1975 Research Associate Ditto,

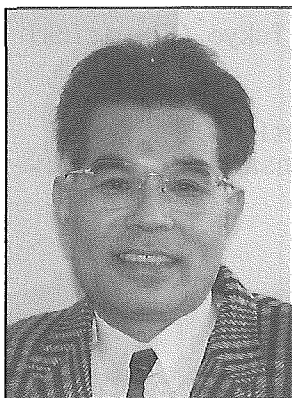
1974 Research Staff, The International Institute for Applied Systems Analysis, Laxenburg, Austria

1971 Research Associate, Nuclear Engineering Research Laboratory, theUniversity of Tokyo, Ibaraki.

Educational Background: Ph.D in Nuclear Engineering (1971); MS in Nuclear Engineering (1968); BS in Nuclear Engineering (1966).All from the University of Tokyo.

He is also Members of the Special Committee, Atomic Energy Commission, the Special Committee, Nuclear Safety Commission, and the Special Committee, Advisoty Council on Energy, Agency of Natural Resources and Energy, MITI.

SESSION 5



CHAIRMAN

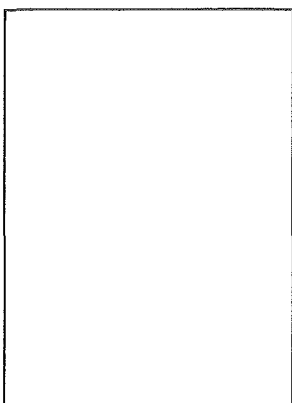
Kazuyuki OHAMA

Date/Place of Birth: September 20, 1935 in Tokyo
Education: Graduated from Tokyo Agricultural University
1961 joined The Yomiuri Newspaper
1972 writer in the general field of science including energy issues
and the policy related to science and technology
1974 registered science and technology writers' club in STA
1991 retired The Yomiuri Newspaper
Present- Science Critics, Writer and Lecturer
Publications: "Science Miscellaneous Encyclopedia (kagaku zatsugaku
jiten)" (22nd impression, 150 thousand copies in total) other various
publications on science, environment and building construction



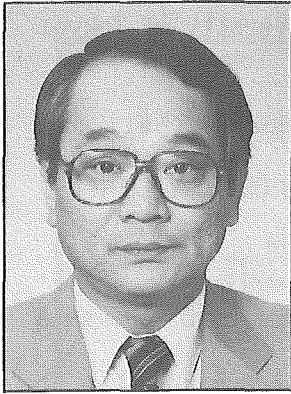
Tadao ISHIBASHI

Date/Place of Birth: April 1945 in Mutsu City, Aomori Prefecture
Activities Related to Japan Federation of bar Association
Jan.1982 Admitted to Aomori Bar Association
Apr.1987- Vice Chairman, Committee on Pollution and Environment
Sep.1987 Publication of "Report on Research and Studies on Proposed
Nuclear Fuel Cycle Facility"
Sep.1991 Publication of "Report on Research and Studies on Proposed
High Level Radioactive Waste"
Activities Related to the National Diet: Apr.1986 "Comments on
Revision of Law for the Regulations of Nuclear Source Material,
Nuclear Fuel Material and Reactors (Nuclear Reactor Regulations Law)"
for Science and Technology Committee of the House of Representatives;
Apr.1988 "Comments on Revision of Nuclear Reactor Regulations Law"
for Science and Technology Committee of the House of Representatives;
Jun.1988 "Comments on Revision of Nuclear Reactors Regulations Law"
for the Special Committee for Science and Technology of the House of
Councilors
Others: He has six times of visit to U.S.A. for study and research of
nuclear fuel cycle and legal aspect.



Marino OSAMI

Birth: 1940
Education:
1963 Graduated from Dept. of Journalists, Faculty of Literature,
Sofia University
Career:
1983-present Manager, Japan Consumers' Association
Committees:
Member, Committee on Promotion for Constructions Quality Improvement,
Ministry of Construction;
Member, Temporary Council on Industrial Structure, Ministry of
International Trade and Industry (MITI)
Member, Special Committee on Life and JIS, MITI
Member, Committee on Public Relations, Center for Saving Energy



Tooru SHINOHARA

Date/Place of Birth: August 27, 1951

Educational History: 1971 Graduated from Faculty of Law, the University of Tokyo

Professional Career:

1971 Joined Ministry of International Trade and Industry

1980 First secretary, Embassy of Japan in The Socialist Republic of the Union of BURMA

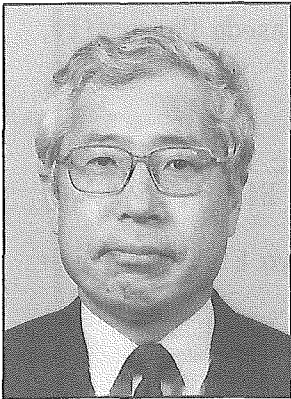
1985 Director for Trade Negotiation and Director, GATT Affairs Office

1986 Counsellor, Permanent Mission of Japan to the International Organizations in Geneva

1989 Director, Trade Policy Planning Office, International Trade Policy Bureau

1990 Director, North Asia Division, International Trade Policy Bureau

1991- Director, Nuclear Power Division, Public Utilities Department, Agency of Natural Resources and Energy



Shun-ichi TAKEBE

Date/Place of Birth: November 25, 1938

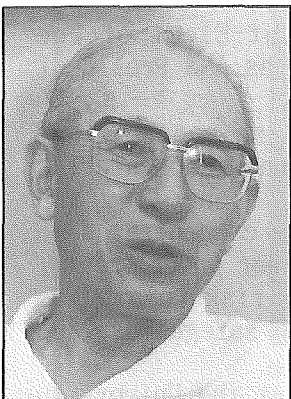
Education: 1961 Graduated from the University of Tokyo

Career:

1961 Joined The Asahi Shimbun (Newspaper)

1983 Science Editor, The Asahi Shimbun

1988- Editorial Writer, The Asahi Shimbun



Tokunosuke NAKAJIMA

Date/Place of Birth: 1925 in Shanghai, China

Education:

1949 Graduated from Faculty of Science, the University of Tokyo

Career:

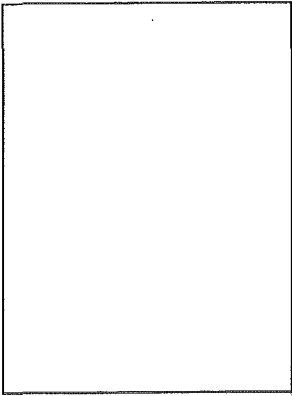
1949-56 Governmental Industrial Research Institute, Tokyo, Ministry of International Trade and Industry.

-83 Deputy Principal Researcher, Division of Reactor Chemistry, Tokai Research Establishment, Japan Atomic Energy Research Institute (JAERI)

1972-85 Member, The 4th Group, Japan Academic Council Counsellor, Special Committee for Atomic Issues

Present:

Professor, Faculty of Commercial Sciences, Chuo University (Outline of Natural Science)



Yoriaki NARITA

Date/Place of Birth: January 20, 1928 in Toyama Prefecture
Education: 1951 Graduated in Faculty of Law, the university of Tokyo;
1951-54 Undergraduate of the University of Tokyo

Career:

May 1954 Instructor, Faculty of Economics, Yokohama National University

Jun.1954-Mar.1967 Officer, Bureau of Enactment of the Cabinet Law,

Apr.1958 Assistant Professor of the same university

Apr.1968 Professor of the same university

Dec.1978 Dean, Faculty of Economics of the same university

Apr.1990- Professor, Research Course, Faculty of Economics of the same university

Apr.1991- Director, Graduate School of International & Business Law at the same university

Others: Vice Chairman, Investigation Committee on Local Systems, the Prime Minister's Office; Member, Council for Housing Sites, Ministry of Construction; Member, National Land Council, National Land Agency; Chairman, Council for Protection of Privacy, Kanagawa Prefecture

Teruaki MASUMOTO

Date of birth: May 12, 1938

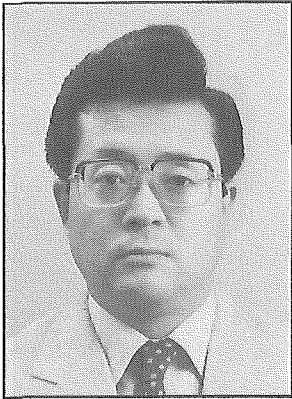
Education: 1962 Graduated from Dept. of Economics, Waseda University,
Career:

1962 Joined Tokyo Electric Power Company, Inc.

1981-84 Manager, Public Relations Department

1985-91 General Administration Manager, Public Relations and Information Department, Federation of Electric Power Companies

1991- Director, Public Relations Department, Tokyo Electric Power Company, Inc.



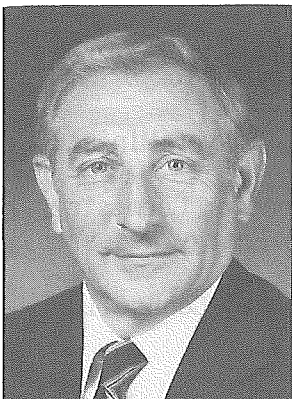
A. David ROSSIN

Dr.A.David Rossin is Vice-President/President-Elect of the American Nuclear Society. He is scheduled to serve as ANS President for the year beginning June,1992.

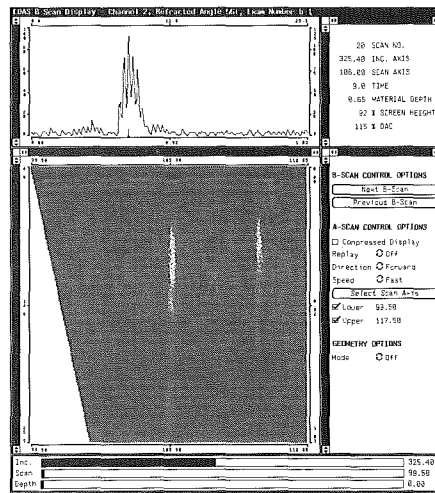
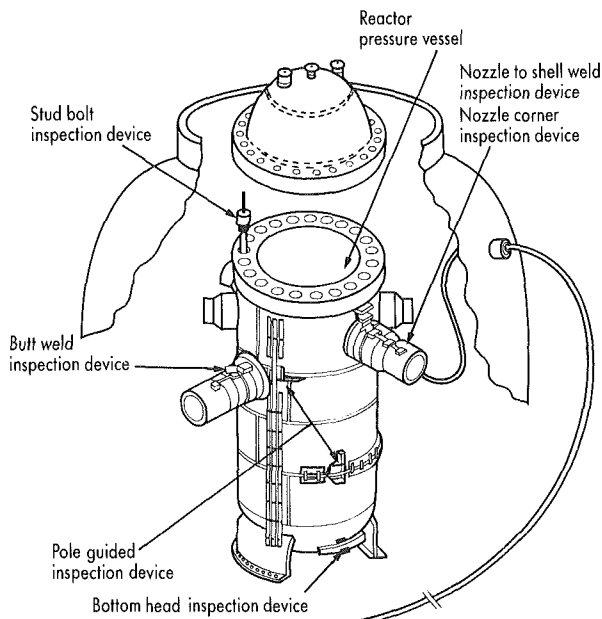
He is president of his own independent consulting company, and advises utility companies, trade associations, National Laboratories and universities on nuclear and advanced energy technology and electricity-related issues. To the extent he can, he concentrates on public understanding of energy issues, including nuclear power safety, risks related to all kinds of energy alternatives, risk related to shortage of energy supply, nuclear proliferation and safeguards, and radiation effects on both materials and people.

He is Visiting Scientist in Nuclear Engineering at the University of California, Berkeley. He is Chairman of the Board of Governors for the Robotics for Advanced Reactors Program at ORNL.

He was Assistant Secretary for Nuclear Energy, U.S.Department of Energy, 1986-1987. He received his Ph.D. degree in metallurgy from Case Institute of Technology (now Case Western Reserve University) in 1966.

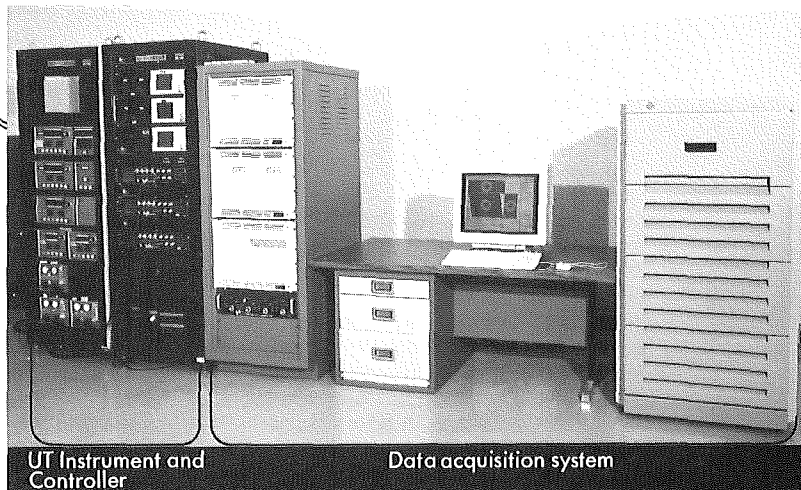


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Components of EDAS. ▾



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fuel reprocessing plant and a low-level radwaste storage facility — two important projects which, when completed, will bring Japan a step closer to the completion of its nuclear fuel cycle. Moreover, we were awarded a contract to design and construct radwaste facilities for Virginia Power — the first time a Japanese engineering company has been contracted by a U.S. utility for the delivery of integrated radwaste facilities.

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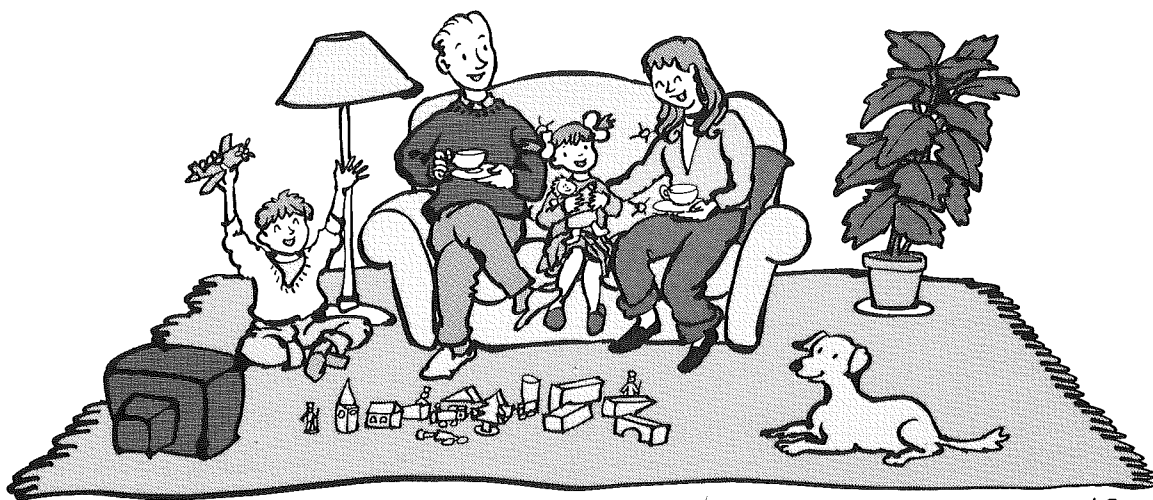
Head Office: New Ohtemachi Bldg., 2-1, Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Tel: Tokyo 03 (3279) 5441 Fax: 81-3-3273-8047 Telex: 0222-3096 JGCTOK J

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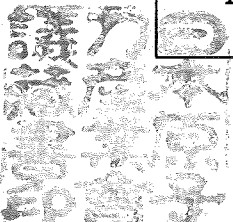
INDUSTRIAL DIVISION

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 Telephone ● Tokyo (03) 3443-3731
 Cable Address ● SPEPUMP TOKYO
 Telex ● 02422527 NIKISO J
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Power from Nature

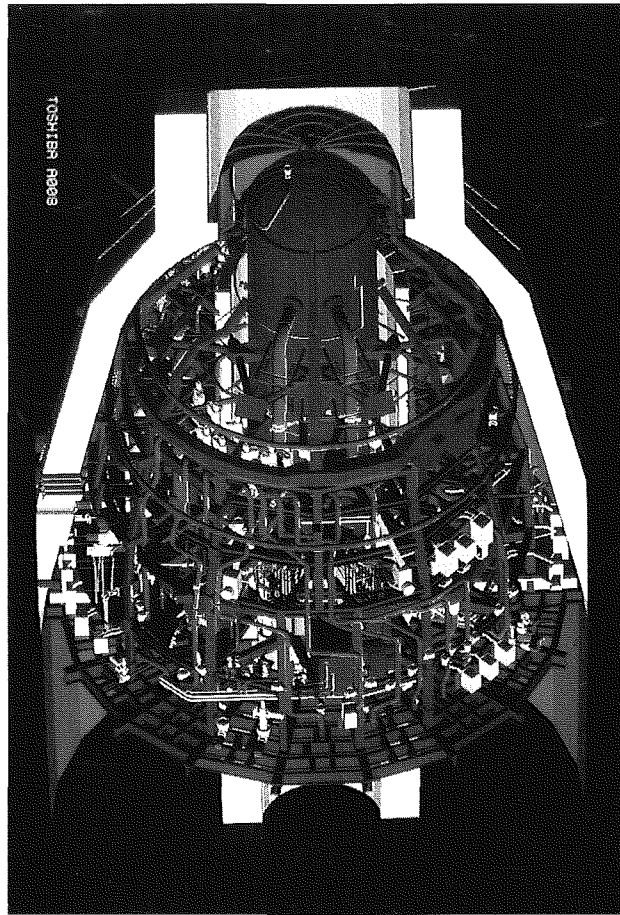
About 50 years ago mankind first generated nuclear power. It was an experiment. It worked. Commercial power generation began. And plants became increasingly complex.

Today the evolution is unceasing. But as our knowledge of nuclear energy increases, the trend is towards simpler systems that employ natural forces. Because, like the sun, nuclear energy occurs in nature. The way we are thinking at Hitachi, it's simply power from nature.

HITACHI

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Ready for the future of nuclear energy? Toshiba's already there.

Toshiba, one of the world's largest electric and electronics manufacturers, is today also a leading supplier of nuclear energy facilities and equipment.

Nuclear technology across-the-board

Toshiba is active in *all* aspects of nuclear power generation, from the engineering, construction and maintenance of nuclear facilities, to computers, instrumentation and controls, radwaste treatment systems, and even the supply of fuel fabrication services.

Proven record in nuclear facilities

A major participant in Japan's nuclear development program for the past 30 years, Toshiba has also delivered a significant number of boiling water reactors (BWRs) that are noted throughout the world for enhanced safety, reliability, operability, availability and economy.

Experience in diverse energy fields

Toshiba's activities in nuclear energy come backed by nearly a century of experience in hydro, oil, LNG and geothermal power facilities. While continuing to lead the field in Japan, we are now also fueling advances in these and other energy projects everywhere.

Shaping the future of nuclear energy

Today, Toshiba's experience and vast, integrated technologies continue to play a vital role in Japan's nuclear energy program. And all around the world, they are contributing to new developments that will one day free our dwindling fossil fuel reserves for other, more creative uses, and secure nuclear energy as the cleanest, safest, most viable fuel alternative of all.

That, Toshiba believes, is the future of nuclear energy. And that's what we're working to realize, right now.

In Touch with Tomorrow
TOSHIBA