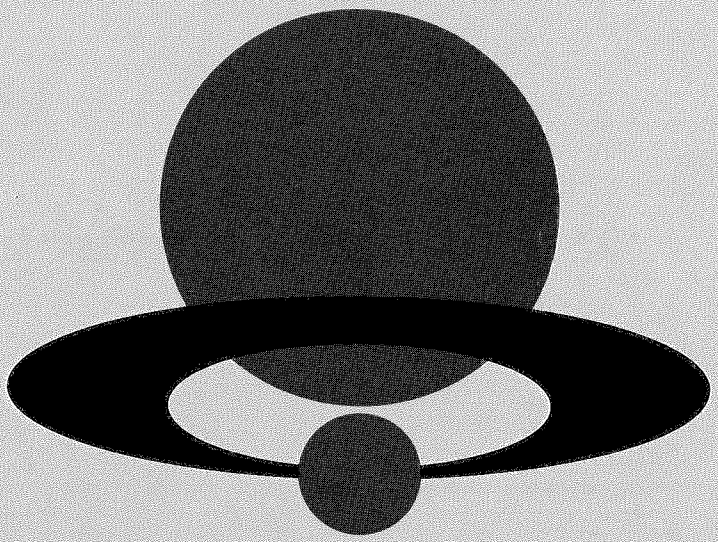
The 24th JAIF ANNUAL CONFERENCE

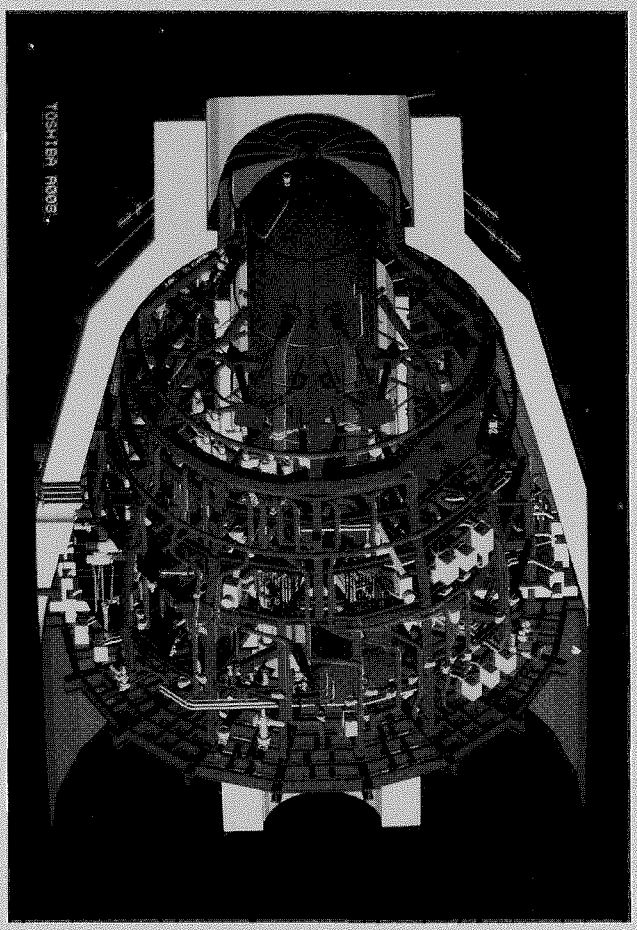
ABSTRACTS



April 8–10, 1991

Mielparque Hall, Tokyo

JAPAN ATOMIC INDUSTRIAL FORUM, INC.



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.

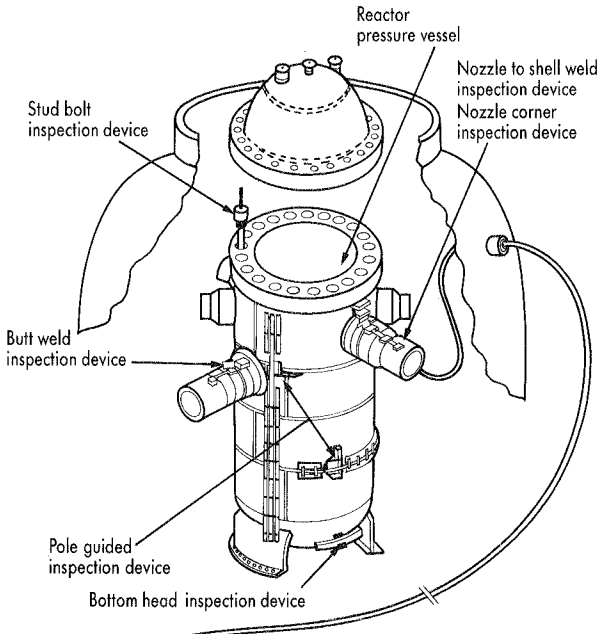
That, Toshiba believes, is the future of nuclear energy. And that's what we're working to realize, right now.

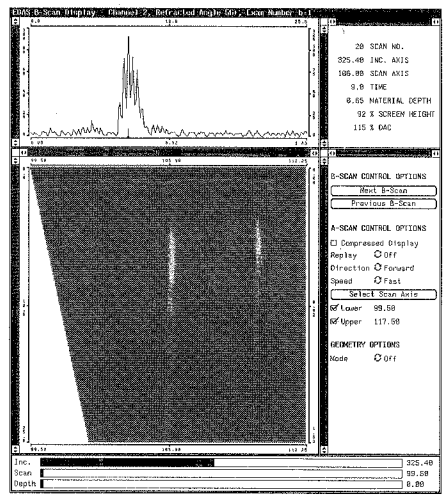
In Touch with Tomorrow

TOSHIBA

For further information, contact: Marketing Department, Nuclear Energy Division, Toshiba Corporation
1-6, Uchisaiwai-cho 1-chome, Chiyoda-ku, Tokyo 100, Japan Phone: (03)3597-2084, Facsimile: (03)3597-2678, Telex: J22587

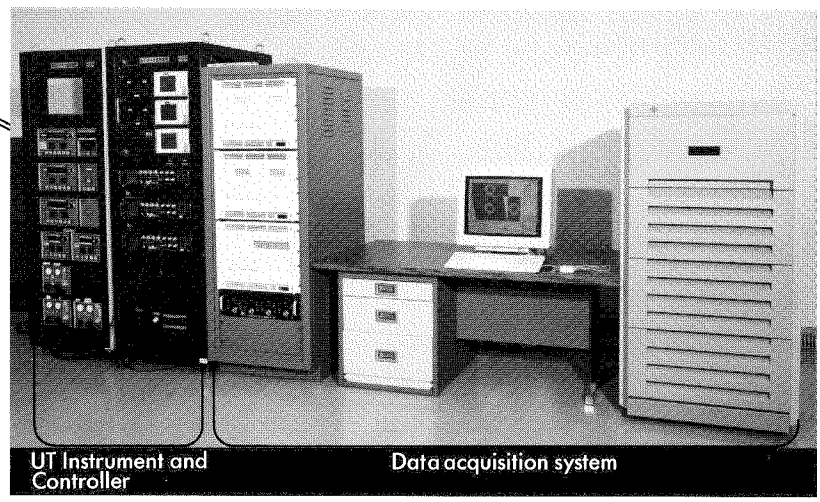
We are contributing to safe and reliable operation of nuclear power plant through ISI system





Output sample of EDAS: A-scan waveforms with B-scan images.

Components of EDAS.▼

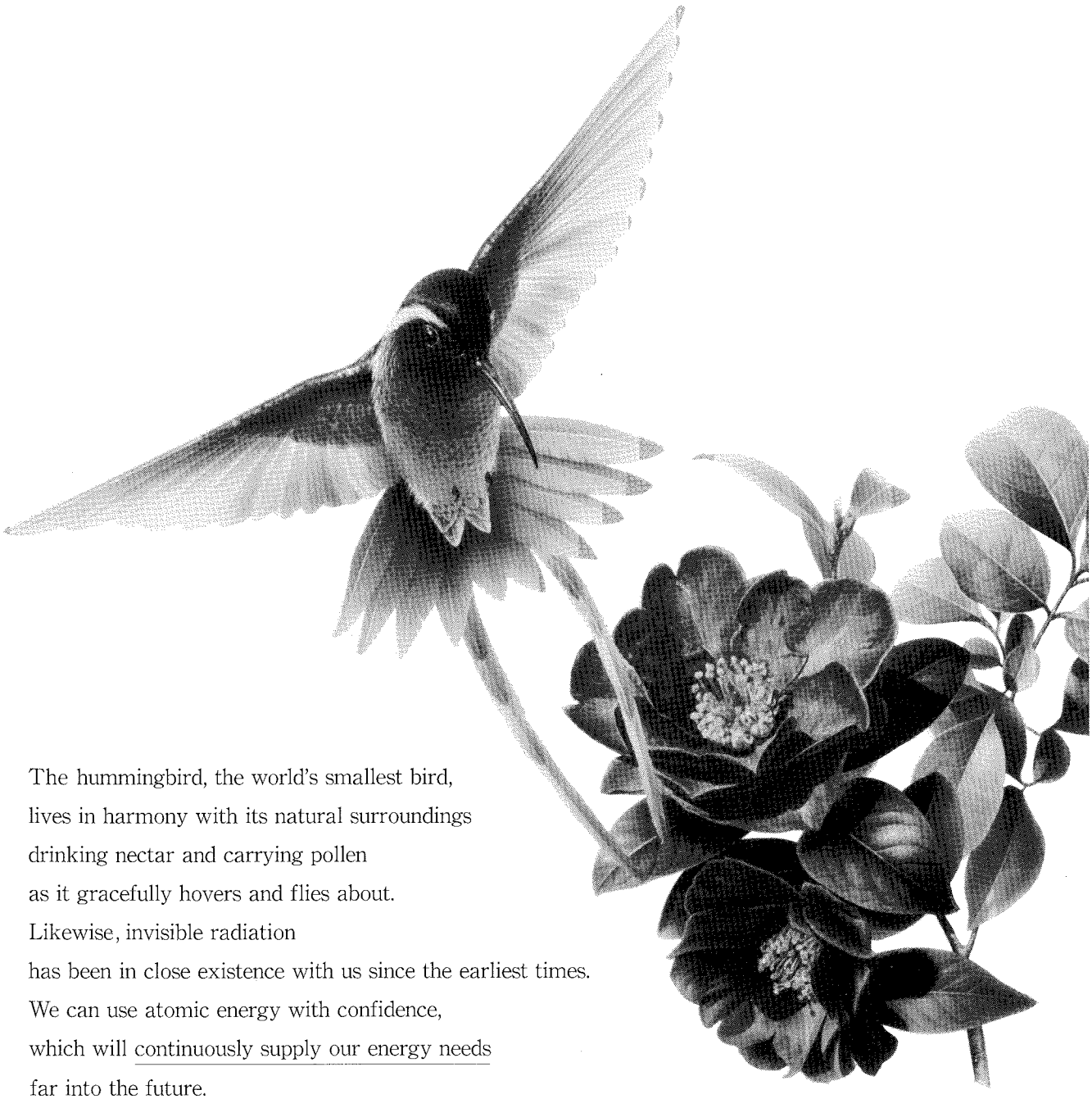


EDAS: Data acquisition and processing system for ISI newly developed by Southwest Research Institute (SwRI).

IHI **Ishikawajima-Harima Heavy Industries Co., Ltd.** **NUCLEAR PLANT SALES DEPT.**
Tokyo Chuo Building, 6-2, Marunouchi 1-chome, Chiyoda-ku, Tokyo, 100 Japan Tel: 03(3286)2185 Telex: IHIHQT J22232

MITSUBISHI ELECTRIC CORPORATION
ATOMIC ENERGY PUBLIC RELATIONS COMMISSION

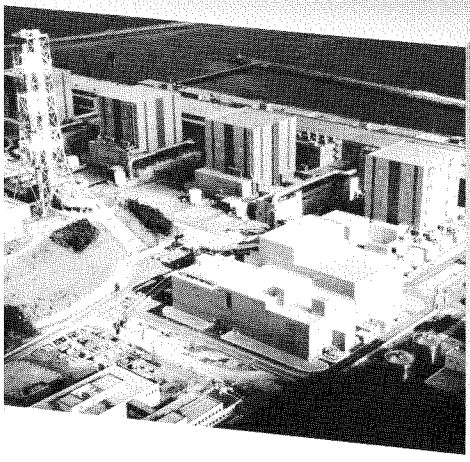
Continuously...



The hummingbird, the world's smallest bird,
lives in harmony with its natural surroundings
drinking nectar and carrying pollen
as it gracefully hovers and flies about.
Likewise, invisible radiation
has been in close existence with us since the earliest times.
We can use atomic energy with confidence,
which will continuously supply our energy needs
far into the future.

MITSUBISHI ELECTRIC CORPORATION: 2-3, Marunouchi 2-chome, Chiyoda-ku, Tokyo 100 Telex: J24532 Cable: Melco Tokyo.

JGC, WE CAN PROVE IT



The Expert in Back-end Engineering Services

Ever since our JGC specialists were called on to design and construct Japan's first spent nuclear fuel reprocessing plant in cooperation with SGN of France, we've continued to establish ourselves as the country's leading engineer for radwaste treatment, disposal and other back-end facilities. And through our efforts and achievements, we've earned worldwide recognition for our top-quality engineering services and outstanding expertise in constructing nuclear fuel cycle facilities – particularly for radwaste management and spent nuclear fuel reprocessing.

These are not claims. These are facts. And these facts have led two major Japanese nuclear power service companies to contract us for the delivery of a 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.

If we haven't convinced you at this point that we're the best when it comes to nuclear fuel cycle facilities, there's only one other way to prove it. Put us to work. You'll find that everything we've told you is true.

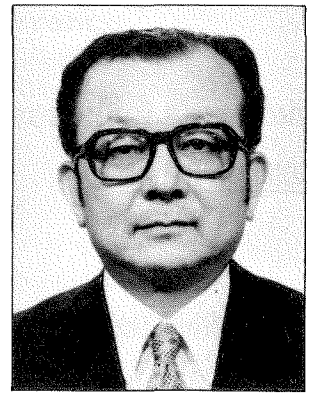
Total Engineering and Construction . . . Worldwide

JGC CORPORATION

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

Overseas Network: • Beijing • Jakarta • Singapore • Kuala Lumpur • Tehran • Bahrain • Kuwait • Al-Khobar • Riyadh • Jeddah • The Hague • Paris • London • Algiers • Arzew • Lagos • São Paulo • Santo Domingo • Washington, D.C. • Houston • San Jose

Jiro Enjoji
Chairman, JAIF



Toyoaki Ikuta
Chairman, Program Committee

Basic Theme for the Conference

ENERGY IN THE 1990'S: EXPECTATIONS FOR NUCLEAR ENERGY

The current energy situation in the world faces the severe and complicated reality. While it requires the rapid increasing energy demand in the developing countries more than in the industrial countries, the motivation of restraint on the use of fossile fuels is being further accelerated by anxiety about environmental pollution on the global scale. The apprehensions on the stable oil supply are reflected by the Gulf War, and the drastic political and economic changes in the Eastern European Countries, the Soviet Unions as well as the market unification in the European Communities have added more complexities on the energy situation.

Taking such situations into consideration, this Conferance has the following objectives; to explore the future di rectionson the world energy demands and the nuclear power development and to discussthe issue for international cooperation to further enhance the peaceful use of nuclear energy. Fuethermore the Conference plans to scrutinize the social and economical problems as consequence of the phase-out policy of nuclear power taking the current status in Sweden and Switzerland. The objectives extend to the assessment studies on the radiological consequence of the Chernobyl accident carried out by various organizations in the world and the IAEA, and tothe nuclear safety and the public understanding for the development of nuclear power. Last but not at least, the Conference expects clarifications of the role of nuclear energy through the discussions among the representatives of the Japanese political parties.

In this year's Conference much time is appropriated for discussions between speakers and Japanese/overseas participants. Participants are invited to exchange views and make comments in each discussion.

24th JAIF ANNUAL CONFERENCE
PROGRAM OVERVIEW

MON. APRIL 8

Opening Session
9:30 - 12:00

Session 1
13:30 - 18:00

World Situation in Flux: Energy and Nuclear Power

JAIF Chairman's Reception
18:30 - 20:00

Tokyo Prince Hotel
Povidence Hall

TUE. APRIL 9

Session 2
9:00 - 12:00

Phase-out Policy of Nuclear Power: Where It Will Go

Luncheon
12:30 - 14:30
Hotel Okura
Room Heian

Films
12:30 - 13:45
Mielparque Hall

Session 3
15:00 - 18:00

The Radiological Effects of Chernobyl Accident

WED. APRIL 10

Session 4
9:00 - 12:00

Nuclear Safety and Public Understanding: What is Necessary

Session 5
13:30 - 17:00

Requirements for Energy and Nuclear Policy

The 24th JAIF Annual Conference

Basic Theme:
ENERGY IN THE 1990'S: EXPECTATIONS FOR NUCLEAR POWER

Monday, April 8

§ OPENING SESSION 9:30 - 12:00

Chairman: Sho Nasu
President
Tokyo Electric Power Co.

Remarks by Chairman of Program Committee
Toyoaki Ikuta
President
Institute of Energy Economics, Japan

JAIF Chairman's Address
Jiro Enjoji
Chairman
Japan Atomic Industrial Forum

Remarks by Chairman of Atomic Energy Commission
Akiko Santo
Chairman
Atomic Energy Commission
Minister for Science and Technology

Special Lectures:

"Energy Policy for the Nineties: An EC Viewpoint"
Antonio Cardoso e Cunha
Energy Commissioner
European Communities

"The New Global Order and Energy Issues"
Marvin Runyon
Chairman
Tennessee Valley Authority
U.S.A.

§ SESSION 1 13:30 - 18:00
WORLD SITUATION IN FLUX: ENERGY AND NUCLEAR POWER

Chairman: Tsutomu Watamori
Vice Chairman
Japan Atomic Industrial Forum

"The Future Role of Nuclear Energy in the Global Energy Balance"
Boris A. Semenov
Deputy Director General
International Atomic Energy Agency

"Expectations for International Cooperation in the Nuclear Power Development"
Vitaly F. Konovalov
Minister for Nuclear Power and Industry
U.S.S.R.

"Energy Strategy towards the 21st Century"
Tom A. Hendrickson
Principal Deputy Assistant Secretary
for Nuclear Energy
Department of Energy
U.S.A.

"Long-term Prospects for Energy Demand and Supply and the Concept of Nuclear Development in Japan"
Kenjiro Ogata
Director General
Agency of Natural Resources and Energy
Ministry of International Trade and Industry

[Intermission]

Chairman: Fumio Watanabe
Vice Chairman
Japan Atomic Industrial Forum

"Energy Privatisation and Future of Nuclear Power in UK"
Timothy Walker
Permanent Under-Secretary
Department of Energy
United Kingdom

"Efforts for Energy Security and International Cooperation"
Jan Jicha
Deputy Minister
Federal Ministry of Economy
Czech and Slovak Federal Republic

"Towards the New Global Cooperation"
Remy L. Carle
Deputy Director General
Electricite de France
France

Discussion
-- Direction of the New Global Cooperation

Participants:
Lecturers in this Session and;

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

Robert L. Long
President Elect
American Nuclear Society
U.S.A.

Iyos Subki
Deputy Director General
National Atomic Energy Agency
Indonesia

JAIF CHAIRMAN'S RECEPTION 18:30 - 20:00
Providence Hall, Tokyo Prince Hotel

- -

Note: In this year's Conference much time is appropriated for discussions between speakers and Japanese/overseas participants. Participants are invited to exchange views and make comments in each discussion.

Tuesday, April 9

§ SESSION 2 9:00 - 12:00
PHASE-OUT POLICY OF NUCLEAR POWER: WHERE IT WILL GO

Chairman: Takamitsu Sawa
Director, Insitute of Economic Research
Kyoto University

"Early Phase of Nuclear Abolished in Sweden"
Karl-Axel Edin
Managing Director
KRAFTSAM
Sweden

"Swiss Energy Policy and the Future of Nuclear Power"
Edward Kiener
Director
Federal Office of Energy
Switzerland

Panel Discussion
Panelists:
Peter Åsell
Energy Advisor to the Minsiter of Industry
Sweden

Peter Hahlen
Secretary General
Swiss Association for Atomic Energy
Switzerland

Yoichi Kaya
Professor
University of Tokyo

Susumu Yoda
Executive Vice President
Tokyo Electric Power Co.

Karl-Axel Edin
Eduard Kiener

Discussion with the floor

LUNCHEON 12:30 - 14:30 (Bus service available to and from
Room Heian, Hotel Okura Hotel Okura)

Remarks by Minister of International Trade and Industry
Eiichi Nakao
Minister of International Trade and Industry

Special Cultural Lecture
Ikuo Hirayama
President
Tokyo National University of Fine Arts and Music

FILMS 12:45 - 14:00
Mielparque Hall

Films will be shown on the following topics;
- Safety regulation on nuclear power
- Aseismicity of a nuclear power plant
- Nuclear safety
- Radioactive waste management

(Films in Japanese language)

§ SESSION 3 15:00 - 18:00
THE RADIOLOGICAL EFFECTS OF CHERNOBYL ACCIDENT

Chairman: Eizo Tajima
President
Nuclear Safety Research Association

"Radiological Effects of Chernobyl Accident"
Toshiyuki Kumatori
President
Association of Radiation Effects

Panel Discussion
Panelists:

Tsutomu Sugawara
Professor Emeritus
Kyoto University

Masao Nakamura
Editorial Writer
The Yomiuri Shimbun

Toshiyuki Kumatori

(Other panelists to be announced)

Discussion with the floor

Wednesday, April 10

§ SESSION 4 9:00 - 12:00
NUCLEAR SAFETY AND PUBLIC UNDERSTANDING: WHAT IS NECESSARY

Chairman: Ryoju Katsube
TV Caster
NHK Enterprises Co.

"Issues of Nuclear Development and Public Acceptance"
Teiichi Yamamoto
Director General
Atomic Energy Bureau
Science and Technology Agency

"Nuclear Safety and Public Recognition"
Shunsuke Kondo
Professor
University of Tokyo

Panel discussion
Panelists:

Fuyuko Kamisaka
Social Critic

Noriko Kimoto
Social Critic

Hirotada Hirose
Professor
Tokyo Woman's Christian University

Yoshio Matsui
Deputy Managing Editor
The Yomiuri Shimbun

Teruaki Masumoto
General Administration Manager
Public Relations & Information Dept.
Federation of Electric Power Companies

Commentator:
Ann S. Bisconti
Vice President
US Council for Energy Awareness
U.S.A.

Discussion with the floor

§ SESSION 5 13:30 - 17:00
REQUIREMENTS FOR ENERGY AND NUCLEAR POLICY

Chairman: Soichiro Tahara
Social Critic

Panel discussion
Panelists:

Kaoru Yosano
Member, House of the Representatives
Liberal Democtatic Party

Shigeru Ito
Member, House of the Representatives
Social Democratic Party of Japan

Mikio Oomi
Member, House of the Representatives
Komeito

Hiroshi Kikunami
Chairman of the Policy & Propaganda Commission
Japanese Communist Party

Eiichi Nagasue
Member, House of the Representatives
Japan Democratic Socialist Party

Discussion with the floor

CLOSING

Toyoaki Ikuta
Chairman
Program Committee

MONDAY, APRIL 8

9:30 - 12:00
OPENING SESSION

ENERGY POLICY FOR THE NINETIES: AN EC VIEW-POINT

A. Cardoso e Cunha
Energy Commissioner
European Communities

-- Policy orientaions

-- Internal market for energy

-- Internal dimension

-- EC - USSR bilateral cooperation

-- Energy cooperation with the PECO

-- A European Energy Charter

-- Nuclear energy

-- Energy technology cooperation

-- The place of coal

-- Oil policy

"The New Global Order and Energy Issues"

Marvin Runyon
Chairman
Tennessee Valley Authority
U.S.A.

MONDAY, APRIL 9

13:30 -18:00

SESSION 1 WORLD SITUATION IN FLUX: ENERGY AND NUCLEAR POWER

Despite the increasing demand for energy, the current global energy situation faces very severe conditions due to unstable supplies of crude oil in the medium and long term originated in increasing demand for energy in developing countries and restraints on the use of fossil fuels caused by anxieties about environmental pollution on a global scale. The Gulf War, drastic political and economic changes in Eastern European countries and the Soviet Union, and the unification of the EC, also have a major influence on energy supplies in the future. Given such an environment, this session will focus on the newly developed policies for energy/nuclear power development in each country, issues for international cooperation to enhance the peaceful use of nuclear energy, future demand and direction of nuclear power development under Glasnost in the Soviet Union/Eastern Bloc, and safety issues concerning Russian power reactors.

THE FUTURE ROLE OF NUCLEAR ENERGY IN THE GLOBAL ENERGY BALANCE

paper to be presented by
Dr. B.A. Semenov
International Atomic Energy Agency, Vienna
at the 24th JAIF Annual Conference

Abstract

Three energy themes, some contradictory, have emerged within the last ten years. The need for energy for developed and developing countries continues unabated. The Gulf war has demonstrated the conflict between energy security and stable economies. And concern over global warming has demonstrated that reliance on fossil fuels for energy demands may contribute to unprecedented climatic change. A conscious decision to encourage nuclear power, in spite of its perceived shortcomings, may be one of the most practical near- and medium-term solutions available to many countries. This paper explores recent trends and future prospects for nuclear power in the overall energy context.

THE PRESENT AND THE FUTURE OF NUCLEAR ENERGY AND INDUSTRY IN THE USSR

V. F. Konovalov
Minister for Nuclear Power and Industry
U. S. S. R.

The paper reports the actual state of the USSR nuclear energy and industry. It is noted that at present in the USSR there are 15 NPPs in operation with 46 units generating 36,560 MW(e) on the whole. It analizes the role and place of nuclear power in the energy supply of the country (its share for 1990 was estimated as 211 billion KW/h). The paper gives a comparative analysis of the available energy sources and shows that the increase in the energy generation without any damage of ecology is only possible with further development of nuclear power.

It analizes the previous national nuclear power program made public in the early 80s:
- very rapid growth of nuclear generation capacity (a level of 190 GWe expected within less than three decades);
- principal expansion of nuclear power application for areas of industrial and district heating;
- dynamic development of fast breeder reactors with the purpose to provide nuclear power with fuel for a long period of time;
- development of low power nuclear facilities for remote and hard-to-access regions, as well as for merchant nuclear fleet.

It is noted that the initial extremely extensive nuclear power growth rate was fully supported with the fuel but was slowed down by the machine-building industry which was lagging behind. Nevertheless, by mid-80s 4 to 5 GWe of nuclear units were commissioned each year and commercial power units with unit power of 1-1, 5 MW(e) were put into operation.

It can be concluded that by that time the USSR nuclear power became an important factor in power generation with a highly developed nuclear industry: fuel production and machine-building.

The paper analizes the negative consequences of the Chernobyl accident for nuclear power of the country and the growth of active opposition to further development of nuclear power. As a result, during the last four years 100,000 MW(e) of nuclear power facilities were not designed and constructed.

Lately, the public opinion in different regions started to change in favor of nuclear power. Judging by that, good reasoning should win. As an example, the decisions of the Soviets of people's deputies in Voronezh, Kursk, Murmansk and Chelyabinsk regions favoured the construction of new power units (more than 7,000 MWe in total).

There is a brief description of the new program of nuclear power development and prospects of nuclear industry in the USSR (less uranium mining and open excavation of uranium, more underground leaching and use of by-products, development of modern technology of uranium enrichment and fuel production, including mixed oxide fuel).

Then follows a conclusion that the future development of nuclear power depends on the solution of several problems:
- enhancement of reactor safety;
- nuclear waste handling.

The successful solution of these problems is possible by joint international efforts and requires close cooperation of scientists and experts of all the countries developing nuclear power. The paper states the importance of fruitful cooperation under the auspices of IAEA, as well as bilateral cooperation aimed at solving the above mentioned problems.

With respect to international cooperation, the paper marks possible role of the Soviet Union in supplying fuel to nuclear power units of other countries and possible participation in joint construction of NPPs with inherently safe new gencration of reactors, especially of medium and low power. It gives the estimates of uranium resources in the USSR and its processing capacities.

The conclusion is that the future development of nuclear power both in the USSR and other countries depends on the restoration of the public trust towards nuclear power which is at present the most perfect way of energy production.

"Energy Strategy towards the 21st Century"

Tom A. Hendrickson
Principal Deputy Assistant Secretary
for Nuclear Energy
Department of Energy
U.S.A.

Long-term Prospects for Energy Demand and Supply and the Concept of Nuclear Energy Development in Japan

Kenjiro Ogata
Director General
Agency of Natural Resources and Energy
Ministry of International Trade and Industry

I. Basic direction of Japan's energy policy

1. Long-term prospects for energy demand and supply and nuclear energy within this framework

(1) Thoroughly effective use of energy

(2) Establishment of appropriate energy demand and supply structure

2. System to develop comprehensive energy policies

II. Concept of nuclear energy development in Japan

1. Japan's basic concept for a nuclear energy policy

2. Emphasis of nuclear energy policy for achieving the goal of nuclear energy development

(1) Safety assurance policy

(2) Back-end policy

(3) Plant siting promotion policy

(4) Public awareness policy

Trends in Japan's Energy Demand Growth Rate

(units:%)

	'69	1st oil crisis '73	2nd oil crisis '79	decrese in oil prices '86	'87	'88	'89
Total energy consumption	9.2	0.9	△ 0.4	4.8	5.7	3.4	
Industrial sector	8.5	△ 0.8	△ 2.1	4.8	5.9	2.7	
Household sector	11.5	3.3	1.9	5.3	5.4	2.3	
Transportation sector	9.2	4.2	1.3	4.1	5.6	6.3	

SOURCE:MITI

Long-Term Energy Supply And Demand Outlook

Item \ Fiscal year	FY 1989 (actual)			FY 2000			FY 2010			Goal to achieve the supply of energy alternative to oil	
Primary Energy Supply	499 million kl			594 million kl			657 million kl			FY 2010	
New Energy Sources etc	6.4 million kl	1.3	%	17.4 million kl	3.0	%	34.6 million kl	5.3	%	35.0 million kl	9.7 %
Hydro (conventional)	88 billion kWh (20.3 GW)	4.6	14.8	91 billion kWh	3.7	20.2	105 billion kWh	3.7	26.8	250 billion kWh	6.9
Geothermal	0.4 million kl	0.1		1.8 million kl	0.3		6.0 million kl	0.9		6.0 million kl	1.7
Nuclear	183 billion kWh (28.9 GW)	9.0		330 billion kWh	13.3		474 billion kWh	16.9		1110 billion kWh	30.8
Natural Gas	49.9 million kl	9.6		65.0 million kl	10.9		80.0 million kl	12.2		80.0 million kl	22.2
Coal	113.6 million t	18.1		142.0 million t	17.5		142.0 million t	15.7		103.0 million t	28.6
Oil	289 million kl	57.3		305 million kl	51.3		298 million kl	45.3		—	

POWER GENERATION CAPACITY OUTLOOK

(unit:MW)

	at the end of FY 1988	(%)	at the end of FY 2000	(%)	at the end of FY 2010	(%)
Nuclear	28,700	17.4	50,000	22	72,000	27
Coal	11,120	6.7	29,600	13	40,000	15
LNG	33,060	20.1	50,300	22	53,000	20
Hydro	36,130	21.9	44,500	19	51,700	19
Conventional	19,130	11.6	21,500	9	25,000	9
Pumped-storage	17,000	10.3	23,000	10	26,700	10
Geothermal	180	0.1	1,000	0.4	3,500	1
Oil etc.	55,630	33.8	51,200	22	40,200	15
Methanol	—	—	—	—	1,000	0.4
Dispersed sources	—	—	1,100	0.5	5,700	2
Total	164,820	100.0	227,700	100	267,000	100

GENERATED POWER OUTLOOK

	Generated power (GWh)					
	FY 1988	(%)	FY 2000	(%)	FY 2010	(%)
Nuclear	177,600	26.6	329,000	35	473,000	43
Coal	63,600	9.5	156,000	16	163,000	15
LNG	141,400	21.2	188,000	20	201,000	18
Hydro	88,600	13.3	101,000	11	118,000	11
Conventional	80,100	12.0	85,000	9	99,000	9
Pumped-storage	8,500	1.3	16,000	2	19,000	2
Geothermal	1,100	0.2	6,000	1	21,000	2
Oil etc.	194,400	29.2	163,000	17	105,000	10
Methanol	—	—	—	—	4,000	0.3
Dispersed sources	—	—	3,000	0.3	25,000	2
Total	666,800	100	946,000	100	1,109,000	100

Note: "Dispersed sources" represent fuel cells, solar power, and wind power.

EFFORTS TO SECURE ENERGY AND NEED FOR INTERNATIONAL COOPERATION IN CZECHOSLOVAKIA

Jan Jícha
Deputy Minister of Economy

In the end of 1990 we prepared new energy policy of Czechoslovakia. It was submitted to Federal Government and to both Republican Governments and also to parliament to be approved.

The global strategy is;
- reduction of energy demands of our economy
- to give necessary energy background for economy
- use of our own energy sources
- integration of Czechoslovak energy system into European system

The most important goals are:

- decrease of production of brown and black coal as basis for improving the ecology of our country

- to stop till 1995 1200 MW of conventional power stations in North Bohemia - worst polluted area

- increase share of gas in total structure of energy sources and build bigger capacity in underground storing facilities

- decrease consumption of oil and build storing capacities for it /what we do not have today at all/

- to use more of our hydropotential and to solve problems of Gabčíkovo plant on our and the Hungarial border

- to finish construction of nuclear power plant MOCHOVCE /Slovakia/ 4 x 400 MW and 1st and 2nd unit of NPP TEMELIN /Bohemia/

- in the nearest future to decide site and construction of next two nuclear units of appropriate capacity 1000 MW each

- to evaluate according to our technical possibilities and offers future way of production of electricity in our country

  - clean buying of coal
  - gasefication of coal and use of steam-gas cycle
  - nuclear power

- to use not traditional RENEWABLE sources of energy

- diversification in all kinds of energy supply

- opening to west capital coming into our country

- to build cross roads of energies on the territory of our country which has the best geographical position for it in the whole Europe

- to focus our work much more on the regional policy of our country and here mainly in the worst polluted areas

ROLE OF NUCLEAR ENERGY IN CSFR

The present capacity of our nuclear power plants is 3520 MW, which represents 16.2% out of the total installed capacity and covers the basic load of our system. In 1990 the production was about 28% of the total production.

Since our installed capacity is based on Soviet type reactors and the design of the stations is old we have to upgrade all of our present operating units. We organize international experts teams which help us evaluate safety systems to take measures which would encrease safety of our units to average level in Europe. In this aspect we work closely with IAEA and WANO.

We have to finish construction of 4 x 440 MW MOCHOVCE plant /Soviet VVER 440/ and 2 x 1000 MW TEMELIN plant /Soviet VVER 1000/. We have to upgrade these units through construction period. Mainly we have to change instrumentation and control system of both these stations.

In parallel with evaluation of what source of energy should be best for Czechoslovakia in the future, our utilities prepared a tender /bidding/ process for next 2 nuclear units the size of which should not exceed 1400 MW each and its safety standards are of highest level.

Since we have nuclear power in our country, we have to solve all problems connected with production of nuclear energy:

- since we have still enough of uranium, we try to be independant of the U.S.S.R. in manufacturing of nuclear fuel /at least to partner to the U.S.S.R./

- till now we have only small storing capacity of spent nuclear fuel /we are fully dependent on agreement with the U.S.S.R. in taking burnt fuel back to the U.S.S.R./

- we have to take care of all kinds of radioactive waste

- we have to improve significantly public relations on all levels /power stations, region, country, international/.

ENERGY PRIVATISATION AND FUTURE OF NUCLEAR POWER IN UK

Timothy Walker
Permanent Under-Secretary
Head of Nuclear Energy Div.
Department of Energy
United Kingdom

Two themes to talk -

The importance of the market in energy policy

The increasing internationalisation of the nuclear industry

Energy Privatisation

Review of development of UK energy policy over last ten years; continuing replacement of public monopolies and central planning by private ownership and competitive markets. Successful flotation of electricity supply industry. Thriving new market with advent of new suppliers and alternative sources of power generation. Similar moves elsewhere in the world. Nevertheless, regulation still important to reinforce competition, protect the consumer and to deal with environmental issues.

UK regards diverse supply of energy as important. Coal, oil and gas all available; UK first country with commercial nuclear power generation. Renewables also play their part. Nuclear provides 20% of UK electricity. Important part of both diversity and response to environmental issues.

All sources of energy entail risk if not properly controlled. Nuclear no different; accidents occur in other industries. Commitment to safety important, international support for Eastern Europe evidence of this. Move towards greater commonality of safety standards. Welcome EC/IAEA safety conference.

Need for greater openness by industry on both safety and economics; importance of public information programmes.

Environmental issues. Importance of settling disposal of nuclear waste. Growing international business in reprocessing and waste management. UK expertise. Global warming: UK government commitment to stabilise CO_2 emissions at 1990 levels by 2005, provided other countries play this part. Importance of nuclear power which emits almost no CO_2, SO_2, NO_x, UK nuclear power saves 15.5m tonnes of carbon emissions/yr, compared to coal.

Nuclear will need to improve economics in UK if it is to continue to play important role in next decade. More certainty needed about backend costs. Environmental costs relative to other fuels may help. New nuclear company, Nuclear Electric, has been successful - more nuclear output than ever before. Reflects advantages of being able to concentrate on nuclear performance. Life extension of Magnox stations: improved output from AGRs. Sizewell B eight months ahead of schedule. All this is positive.

Review of future of nuclear power in 1994. Will take account of progress of Nuclear Electric as well as developments in electricity market and environmental concerns. Greater internationalisation of design process important. Preparedness to look at number of new designs. Work within European Community and elsewhere towards greater comonality of standards while recognising ultimate responsibility of individual governments to approve designs.

UK Government wishes to maintain nuclear option provided safety maintained, environment protection and economics satisfactory.

Abstract : Towards the new global cooperation

Remy L. Carle, EDF

Japan and France have demonstrated the possibility of developing a strong and continuous nuclear program and the interest of operating large electricity production systems with an important proportion of nuclear energy.

But most of other countries stopped their programs due to public or governmental opposition.

The arguments in favor of nuclear energy are however very clear : energy independance, low cost, low pollution in the environment.

These arguments have their full justification at the world level ; if nuclear energy is not available worldwide during the next century, the world will face a deep energetic déficit, which means great dangers for social and political welfare.

We have to meet this challenge by an international approach of the nuclear development.

The nuclear manufacturers already created links and common ventures. During the next century a few companies will promote nuclear systems on the world market.

The electrical utilities have to organize themselves to keep some control on the market, to define common standards and to jointly promote nuclear realizations. As far as experience feed back is concerned WANO plays already an important role.

Last but not the least the safety authorities will have the difficult task to harmonize nuclear regulations. This point is essential to reassure populations.

Nuclear energy is no more a technical matter but a political one. We must accept the consequences of this fact by stressing the role of energy and electricity in our world.

[MEMO]

TUESDAY, APRIL 9

9:00 - 12:00

SESSION 2 PHASE-OUT POLICY OF NUCLEAR POWER: WHERE IT WILL GO

In Sweden, the Government has decided to phase out nuclear power stations by the year 2010. However, a movement to amend the policy has been raised among the political parties, so that the shutdown of two units by 1995 and 1996 will be postponed. In Switzerland, a 10-year moratorium on new nuclear power plant construction was decided in a national referendum in September 1990, while permitting the operation of existing nuclear power plants. In this session, the problems and future of the nuclear phase-out policy will be discussed in light of influences on the economy and society, impact of the Gulf War, and environmental problems, including the possible development of substitute energies in Sweden and Switzerland.

Early phase of nuclear abolished in Sweden

Karl-Axel Edin, Kraftsam, Sweden

March 7, 1991

Abstract

For thirteen years the political controversy on nuclear power in Sweden has hampered the political decision making. In 1978 the first non socialist government after 44 years of Social Democratic rule was dissolved because of disagreement in the coalition government on the nuclear issue after only 2 years in power. In 1980, as a result of the Three Mile Island accident and the political controversy there was a consultative referendum which authorized a continuation of the earlier plans to construct 12 reactors in total, but no more. In the following decision parliament confirmed the result of the referendum but added that no reactor should be permitted to run after the year 2010. This part of the decision, however, had no legal meaning since it did not have the form of a law. Formally it was just a request to a future parliament to take such a legal decision against using nuclear power after 2010.

After the Chernobyl accident parliament, on the initiative from the ruling Social Democratic Party took a decision to start the phase out of nuclear power by taking two reactors out of operation in 1995. The initiative was partly a move to attract voters from the Green Party who were gaining support. However, the decision to start the phase out in 1995 came under increasing opposition from the labor unions and industry. The public also became more and more opposed to an early phase out.

The Government retreated and has just (in Febr. 1991) proposed to parliament that the earlier plan to start the nuclear phase out in 1995 be

abolished. The proposal has the support of 90 percent of parliament. There is no new confirmation that all nuclear power should be phased out by the year 2010. This means that even the earlier commitment to a total phase out by the year 2010 has eroded and now has little actuality. It seems that the nuclear issue now permanently has been removed from the political agenda.

This outcome can mainly be derived from the following circumstances:

1 Increasing public acceptance of nuclear power. The acceptance is now higher than before Chernobyl, despite of the fact that Sweden was one of the countries outside the Soviet Union that got the highest radioactive fall-out. One contributing factor to the increased public acceptance is that there is a politically approved method of permanent storage of spent nuclear fuel developed by the nuclear power companies.

2 The public is getting better informed about the drawbacks of the alternatives to nuclear power production, due partly to active information campaigns from the industry. There is also a widespread insight that the prospects of renewable energy sources are remote.

3 Since nuclear power accounts for about half of the electricity production, the other half being hydro power, a nuclear phase out would lead to much higher electricity prices. The plans to phase out nuclear power had already adversely affected the investment in the traditionally electricity intensive Swedish industry long before the actual phase out would take place. This aroused the labor unions and industry.

4 It has become increasingly clear that it is difficult to take a political decision to take operational production units out of operation if the

Government does not, as is the case in Sweden, have full control of the power industry. It turned out to be impossible to make the political decision sufficiently credible to convince private companies to take the risk, under the political uncertainty, of investing in new power production that must be in place when nuclear reactors are to be taken out of operation.

SWISS ENERGY POLICY AND THE FUTURE OF NUCLEAR POWER

Dr. Eduard Kiener,

Director of the Federal Office of Energy, Berne

Abstract

The five nuclear reactors currently provide around 40% of Swiss electricity production, with hydropower providing 57%. The first nuclear power plant was put into operation in 1969, and the fifth in 1985. Operational experience has been very good; the plants have shown a very high degree of availability for many years.

Nuclear power was originally welcomed in Switzerland as the energy of the future. Political opposition began to manifest itself towards the end of the 1960s, and in particular in the context of the project for the construction of the Kaiseraugst nuclear power plant, which was abandoned after a long struggle in 1988. This plant would have been located barely 20 kilometres from the centre of the industrial city of Basle. One after the other, civil movements

came into existence independently of political parties, and these gradually gained the support of environmental organisations, and subsequently of political parties, too. The Kaiseraugst project was the most disputed infrastructure project in Switzerland in the last decades. In 1975, the struggle gave rise to an occupation of the site and to terrorist attacks - forms of resistance which had never been known before in Switzerland in terms of either type or extent.

As a result, people's initiatives were launched which the Swiss electorate rejected by relatively narrow margins in the referendums of 1979 and 1984. Then in 1985 the Swiss parliament granted the basic permit for the Kaiseraugst nuclear power plant, which almost certainly would have subsequently gone ahead had it not been for the accident in Chernobyl. The insecurity which was brought about by this incident caused the degree of acceptance of nuclear energy to drop to a new low level. Two people's initiatives were subsequently launched; one called for a ten-year permit moratorium, and the other demanded withdrawal from nuclear energy. The voting took place in September 1990. The moratorium initiative was accepted, whilst the withdrawal initiative was only narrowly defeated. Thus the further use of nuclear energy in Switzerland is not excluded, but has been limited for a lengthy period.

Over the years, new arguments have repeatedly been introduced in the nuclear energy discussion, and some of these have also been rekindled again and again. The main themes have been safety and radiation protection, the storage of radioactive waste, reprocessing, nuclear energy research, waste heat, sabotage and proliferation, uranium reserves, economy and need of nuclear energy, and liability in the event of accidents.

Opposition to nuclear energy is largely attributable to the fact that it became more and more evident that there are also negative aspects related to our economic development. It has also not been possible to make the advantages and the necessity of nuclear energy sufficiently credible to our citizens. Another factor is that the opponents of nuclear energy appeal to the emotions, which advocates have to counter with rational arguments.

It will only be possible to increase the acceptance of nuclear energy when our citizens feel that it is absolutely necessary. What is needed is a credible energy policy through increased efforts towards energy economy and the promotion of new energy forms. The government has launched a program in this connection which not only includes energy, but also the entire economy as well as environmental organisations. Should this "Energy 2000" program not succeed, then the danger exists that a possible future anti-nuclear initiative, which

could be launched at any time, would meet with success.

It is intended to at least stabilise fossil fuel consumption and CO2 emissions over the next ten years, and subsequently to lower these levels, by means of legislation (regulations, promotional program). With regard to electricity, stabilisation is planned from around the year 2000. Renewable energies should be replacing 0.5% of electricity production and 3% of fossil fuels in the heating sector by the year 2000. An increase of 5% in hydroelectric power production is planned, and with regard to nuclear energy, a 10% increase in performance is intended. These objectives are more demanding than the layman might imagine.

MINISTRY OF INDUSTRY
Peter Åsell
political adviser

1991-03-13

ENERGY POLICY IN SWEDEN

A presentation of the Government's bill presented to Parliament the 14th of February 1991.

- Abstracts of key note speech for panel discussion.

BACKGROUND.

Sweden is a large country with small population, situated far north with a hard climate. Sweden is technically and industrially highly developed and has a high standard of living, to a large extent based on heavy, energy-demanding industry, such as iron and metal mining, steel and metal production, and paper production. We are highly specialized and dependent on international markets.

NUCLEAR POWER.

Sweden started early with commercial use of nuclear power. Intensive anti-nuclear feelings developed in large groups of population. Nuclear power the most infected political issue in modern Swedish history. 1980 a referendum about nuclear power. A decision was taken that nuclear power shall be phased out at the latest by the year 2010.

GOVERNMENT'S BILL ON ENERGY 1991.

1990 intensive political negotiations between governing Social Democrats and opposing Liberals and Centre party. Three party agreement bridging deep political gaps was met in january 1991. Government's bill is based on this broad political agreement.

Contents:

- Start of nuclear phase-out depends on success for energy conservation and for new sources of energy.

- Decision of final phase out by 2010 is not changed.

- International approach to the green-house effect.

- 5-year program for intensified energy conservation.

- Large program for introducing "near commercial" biomass CHP, medium sized wind power and solar heating.

- Redoubled efforts for development of large scale wind power and large scale biomass-power.

- Turning agriculture into ethanol-fuel production.

POTENTIAL FOR SUCCESS.

Great progress demonstrated in energy conservation. Especially in domestic heating. Shift towards advanced light industry and service sector is gradually diminishing our dependence on heavy industry.

Demand for energy is curbed. Will it turn down?

Beeing a large country with small population we have a theoretical potential to replace nuclear with biomass, wind power and solar heating. Costs are prohibitive. Potential for technical development is large.

Fossil fuels are to be avoided. Natural gas is an open question. Will it be necessary? Will it be acceptable with regard to green-house effect?

HOW TO LIVE WITH A TEN-YEARS NUCLEAR LICENSING MORATORIUM

Situation and Outlook of Utilities and Industry after the Referendum of September 23, 1990 in Switzerland

Dr. Peter Hähnlen
Secretary General, Swiss Association for Atomic Energy (SVA)
Berne

Abstract

In the federal referendum of September 23, 1990, Swiss voters
- refused to abandon nuclear energy, but
- accepted a ten-years moratorium on the licensing of new nuclear power plants.

At the same time, by accepting an energy article in the federal constitution, they agreed to give the central government competences to take certain legislative measures in the field of energy utilization and energy technology development. The straightforward interpretation of this ballot result is that the Swiss fear nuclear energy while realizing its necessity.

The moratorium obviously was seen by the public as a chance to explore the capacity of alternative energy sources and of tachniques for improving energy efficiency. The majority of voters hoped that after ten years it should be more clear whether additional nuclear power plants are really needed or not. Also, many politicians who do not refuse nuclear power altogether thought that a moratorium might calm down the hopelessly polarized nuclear controversy to the point where a half-way rational communication in energy politics could be restored.

In front of this background, the Energy Minister called upon all parties involved to stop their struggle, to joint efforts in a new "Energy Peace" and to support his action program "Energy 2000". The industry accepted to support this approach, provided the antinuclear camp would keep to the rules of the game and would stop undermining public confidence in nuclear power.

Already now, however, some influencial antinuclear groups repeatedly break "Energy Peace" by seeking ways to extend the moratorium beyond the ten years, by continually torpedoing projects for radioactive waste disposal and by promoting campaigns for closing down the oldest Swiss nuclear power plants of Mühleberg and Beznau.

The Swiss utilities today find themselves in a situation where
- consumption of electricity continues to grow, and
- there will be no licences for new nuclear power plants for ten years.

Additional electricity needs in the next couple of years will be covered by substantial imports of nuclear power from our western neighbour, France. By the year 2000, Switzerland - till now a traditional electric power exporter - will import 20% of its electricity from France. It is thus understandable that Swiss utilities would prefer to construct a next nuclear power plant for operations start-up after the year 2000 in their own country - and not in France.

The main concerns of the Swiss utilities during the ten-years moratorium are, in the nuclear field:
- the safe operation of the five existing nuclear power plants, including backfitting and increases of nominal capacities,
- the progress of the projects of Nagra (the Swiss National Cooperative for the Storage of Radioactive Waste), above all the realization of a final repository for low and medium radioactive waste, and
- to maintain research capacities and know-how in nuclear technology at the Paul Scherrer Institute (PSI).

This policy should allow to keep the nuclear option open and to maintain the possibility of building new nuclear power plants - for extension or replacement needs - after the year 2000.

The Swiss nuclear suppliers' industry had adapted its capacities to a reduced market long before the 1990 referendum. With its services for maintenance and backfitting it provides its contribution to the safe operation of existing nuclear power

plants. Existing know-how and substancial investment into development of new products, e.g. new safety valves, is the basis for the continual presence of the few remaining Swiss competitors on the international nuclear suppliers' market.

[MEMO]

TUESDAY, APRIL 9

15:00 - 18:00
SESSION 3 RADIOLOGICAL EFFECTS OF CHERNOBYL

Due to report in the mass media relating an increasing incidence of cancer and abnormal symptoms of the thyroid glands after the Chernobyl accident. people in the

Soviet Union as well as other countries of the world are seriously concerned about the radiological consequences of the accident. Assessment studies are being carried out by various organizations in the world including IAEA. Based on the results of those studies available, this session will carry out a scientific analysis of the influence of radioactivity after the accident through a discussion with participants, and will further discuss the post-accident management and international provision of information.
(Details of this session are subject to change)

"Radiological Effects of Chernobyl Accident"

Toshiyuki Kumatori
President
Association of Radiation Effects

[MEMO]

WEDNESDAY, APRIL 10

9:00 - 12:00

SESSION 4 NUCLEAR SAFETY AND PUBLIC UNDERSTANDING: WHAT IS NECESSARY

The Gulf War, the increasing demand for energy, and various movements both domestically and abroad have started to influence public opinion on energy and nuclear power. A look at the latest trends in public opinion on nuclear power shows that the number of people supporting nuclear power has increased slightly. However, this does not mean that people correctly recognize the role of nuclear power as a source of energy supply. Securing energy supplies is indispensable for people to enjoy their lives, and they will have rely on nuclear energy someday even though they are only concerned about its reliability at present. Through a discussion with participants, this session will consider what is needed at present to deepen people' s understanding of safety and the development of nuclear power.

Development, Utilization, and Public Acceptance of Nuclear Energy

Teiichi Yamamoto
Director General
Atomic Energy Bureau
Science and Technology Agency

1. Background to date:

Accidents at the nuclear power plants of Three Mile Island in the U.S. in 1979 and Chernobyl in the Soviet Union in 1986 left great impact on public opinion with regard to nuclear energy in Japan. In particular, the news of the Chernobyl accident, which resulted in a large-scale disaster, made Japnese people think that an underlying danger could become visible and that it existed as a problem close to them. The general public including the younger generation and housewives in urban areas have been feeling "anxious" about nuclear power.

2. Public opinion on nuclear energy:

The Prime Minister's Office conducted a public opinion poll in September last year. The results published in December indicated that people have "high anxiety and high expectations" at the same time.

Asked about the need for nuclear energy, 65% answered that it is necessary. To a question what the major power source will be in the next decade, 51% answered that it will be nuclear energy, far exceeding 13% for solar energy and 12% for petroleum. When asked about the pros and cons of

establishing more nuclear power plants, 5% answered that it is desirable to actively encourage the construction of more plants, and 44% said that more plants should be built with safe guards, about half of those who answered think that we should have more nuclear power plants: 30% say that there should be no increase, 9% think that the number of plants should be reduced to less than the number now, and 3% answered that even those operating at present should be shut down.

With regard to the safety of nuclear power, 47% answered that it is not safe, and slightly over 44% think that it is safe. To the question whether they have any worries about nuclear energy (multiple answers were accepted), number one representing 43% is that radiation could affect human beings including future generations; radioactivity could leak due to accident or breakdown, 39%; handling of nuclear waste in stock and disposal, 39%; lack of information given about the situation when accidents or breakdowns occur, 31%. It is difficult to get rid of people's anxiety about nuclear power quickly once it arises, and we should make it a goal to have them become aware that "our hard work assures the safety of the nuclear power plants."

3. Present situation and future task of nuclear energy PA activities:

(1) Cover not only areas where nuclear power facilities are or will be located but all over Japan; (2) grass root efforts through direct discussions; and (3) should easily be understood by the younger generation and housewives: those are basic policies for improving matters including public relations through media, distribution of brochures, and other activities, in addition to activities now being done such as dispatching lecturers to study groups in various

communities, production and lending a simplified radiation counter named "Hakaru-kun" to make people aware of the existence of radiation in the natural environment, holding events where applications of radiation around us are exhibited, conducting observation tours of facilities for community opinion leaders, and operating a personal computer communication station to provide information, answer questions, and offer opportunities for users to exchange opinions between and among them.

However, as is understood from the results of the opinion poll mentioned above, people do not have much opportunity to have the information we are providing, and it also seems that they do not feel that such information is trustworthy enough. Rather than having people pay attention to nuclear power only when an accident or breakdown is announced, steady day-to-day efforts should be emphasized to stimulate their interest by offering comprehensive and easy-to-understand information about the need for nuclear energy, safety measures, and others. To achieve this, it is required that we stand on the side of information recipients and consider what kind of information should be offered, in what manner, and to what kind of group, taking into consideration particularly the importance of making it easy to understand. PA activities on nuclear energy should be a steady and long-range effort. Giving publicity in a more familiar way as to the access to governmental information and nuclear energy PA activities will develop trust in the Government. It will also be helpful to create an environment in which from childhood people can have a deeper understanding of energy situation including nuclear power and environmental problems.

4. Conclusion

Needless to say, the understanding and cooperation of general public are important for Government to go forward with the development and utilization of nuclear power. However, in order for people to be able to think that "safety is assured by making efforts", actual results to prove this should come first before asking them to trust the Government or the power companies.

NUCLEAR SAFETY AND PUBLIC RECOGNITION

Shunsuke Kondo
Department of Nuclear Engineering
University of Tokyo

The starting point of the discussion about the safety assurance of industrial activities as well as public facilities in Japan is Article 25 of the Constitution of Japan which states as follows: "all people shall have the right to maintain the minimum standards of wholesome and cultured living: the State use its endeavors for the promotion and extension of social welfare, social security and public health in all spheres of life." The safety assurance of nuclear activities is not an exception and The government regards the event of excessive radiation exposure to workers and the public as unsafe event and regulates the nuclear activities with the objective of preventing the occurrence of the event, or keeping the occurrence frequency sufficiently low, so as to guarantee the Constitutional right of the people as well as fulfill the Constitutional responsibilities of the State.

We can satisfy this objective of nuclear safety regulation if we can realize the request liked by investor that the plant should be built and operated without any incident and failure. However, a sense of human being and engineers in particular tells us that human makes mistakes and machine gets out of order and therefore the regulatory authorities adopt this request only as a part of the measures to fulfill the purpose. In other words, they request as the first defense line to design the facility with naturally occurring safe characteristics and ample safety margin, and build and operate it under strict quality control: nevertheless they request as the second defense line to install emergency shutdown system and emergency core cooling system so as to cope with the occurrence of incident and failures: furthermore they demand as the third defense line to install the containment which prevent the overexposure of the public in the case of large scale fuel damage. Recent probabilistic safety assessments (PSAs) of typical light water reactor (LWR) plants in which operating experiences of Japanese plants have been reflected to some extent indicate the effectiveness of this so-called "defense-in-depth" strategy to accomplish the above mentioned objective of nuclear safety.[1]

On the other hand, the public opinion survey conducted by the Institute of Applied Energy, Tokyo indicates the following points:[2]

(1) About 20% of the public state that nuclear energy is not useful and should be abolished hereafter, while a little over 30% appreciate the usefulness and have affirmative opinion about the further development of nuclear energy. The remaining a little less than 50% of the public belong to a so-called neutral group and change their attitudes depending on the situation.

(2) Affirmative position to nuclear energy stems from the sense of usefulness of this technology and this sense depends on the preference of lifestyles from the viewpoint of energy use, the recognition of the future increase in global energy demand and the appreciation of the necessity of nuclear energy for maintaining and increasing electrical energy supply in future.
(3) Another dimension important to the appreciation of nuclear energy is the

reliability of current socio-political system, nuclear regulation system, and the nuclear technology itself.

(4) Major issues raised by the public in determining their position on nuclear energy are feeling of dread, high consequences of the accident, lack of demonstration of radioactive waste disposal, impossibility of excluding major accident, existence of better technology, deficiency in technology/institution /industry for nuclear safety assurance etc.

(5) The public gets a major part of information on nuclear energy through the mass media and by word of mouth. They regard the NHK (national broadcasting association) and five major newspapers far more reliable than other media.

(6) The residents near the site of nuclear facility come in touch with the safe as well as unsafe stories of nuclear energy while most of residents in Tokyo receive only the unsafe stories.

These suggests that there exist various problems concerning the risk communication among regulators, operators of nuclear facilities and the public. Some of them which are important for the improvement of the risk communication are as follow:

(1) At present, the nuclear regulators receives report on the incident and failures with a view to verifying the validity of the regulation, including those which are too minor to be reported to the regulators in the case of other industries, and they make this report public when they receive. However, the fact that the regulators make this report public sporadically without explaining the significance from the viewpoint of the safety objective and the impact on the defense-in-depth structure might be contributing to widen the perception gap between the public and the nuclear community on the safety of nuclear energy. It can be recommended therefore for the regulator to strengthen the effort to routinely communicate their strategy of risk management with the public so as to be able to have common understanding of the significance of incidents and failures with the public when they report the news. The introduction of nuclear events scale is a significant step toward this goal but not enough. The plant designers and operators are also recommended to strengthen their efforts for more openly communicating their philosophy and reality of risk management with the public.

(2) The media have a crucial role in democratic process and are important actors in risk management activities in society. It is desirable in this respect for the mass media to clarify their criterion for communicating news related to the public safety. It seems difficult for risk analyst to understand the present practice of allocating news communication resource among various pieces of such kind of news from the view point of informing the public the existence of the problem and eventually contributing to the improvement of public safety. It is known that key characteristics of what journalists regard as "good " news story are immediacy, novelty, negativity, fitness to a topical "newsframe", a simple storyline with clearly demarcated "baddies" etc. [3] and it is understandable that the report of incidents and failures at nuclear facilities ranks pretty high from these characteristics. Can it be justified, however, from the business ethics or ethics of human life they advocate to spare far more time and space for the news of incident which does not violate the objective of safety assurance than the news of real loss of lives due to the traffic accident, for example, and miss the opportunity to contribute to the reduction of this unsafe element of our society which causes loss of more than 10,000

lives annually ?

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3. Malcom Peltu:"Mass Media and Major Accident Hazard: The Role and Responsibilities of Journalists and Experts", in H.B.F.Gow and H. Otway (Ed.):Proc. CEC Conf. on Communicating with the Public about Major Accident Hazards, Elsevier Applied Science (1990).

[MEMO]

[MEMO]

WEDNESDAY, APRIL 10

13:30 - 17:00

SESSION 5 REQUIREMENTS FOR ENERGY AND NUCLEAR POLICY

When one thinks energy issues, it is necessary to evaluate the advantages and disadvantages of various energy resources and the possibility of saving energy. For this reason, a forum for open discussions at a national level is sought. With the participation of various political parties representing the general public, this session will consider the selection of energy sources, the ensurance of supply to execute a national plan for energy demand and supply, environmental preservation, and national economy in general so as to study direction of energy and nuclear policies.

[MEMO]

[MEMO]

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BRIEF PERSONAL HISTROY
OF
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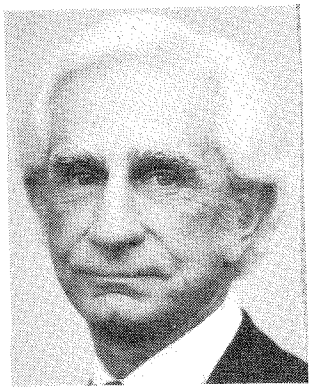

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T．ヘンドリクソン氏
Mr. Tom A. Hendrickson

OPENING SESSION

Chairman

SHOH NASU

Date of Birth: September 19, 1924

Academic career:

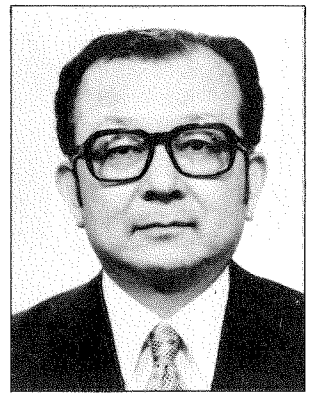
1948 Graduated from Political Science Course of Law Department, the University of Tokyo

Professional career:

1948 Entered Kanto Electric Power Distribution Co.
1951 Entered the Tokyo Electric Power Co., Inc. (through the reorganization of the electric power industry)
1964 Manager, Research Sec., General Planning Dept.
1966 Manager, General Affairs Sec., General Affairs Dept.
1971 Acting General Manager, General Affairs Dept.
1974 General Manager, General Affairs Dept.
1977 Director (in charge of General Affairs Dept.)
1979 Managing Director
1982 Executive Vice President
1984~ President

Other major posts:

1985~ Vice-Chairman, Keizai Doyukai
1980~ Chairman, the Federation of Electric Power Companies



TOYOAKI IKUTA

Date of Birth: July 16th, 1925

Present Titles:

President, The Institute of Energy Economics, Japan
Director, Japan Atomic Industrial Forum
Director, Japan Energy Conservation Center
Director, Research Institute for Peace and Security, Tokyo
Director, The Committee for Energy Policy Promotion (Chairman of Experts Subcommittee)
Member of some governmental councils, such as Industrial Structure Council, Industrial Technology Council, Advisory Committee for Energy (Chairman of Energy Demand and Supply Committee), Petroleum Council, Electric Utility Council
Member of some International Groups, Namely, Oxford Energy Policy Club, Group of 13, "The Group"

Educational Qualification:

B.A. (Economics) 1948 Tokyo University, Japan

Publication:

"Reserved Seats for Energies" – 1985
"OPEC" – 1980
"Energy Theory for Citizens" – 1981

and many other articles regarding energy in general, oil, gas and nuclear issue.

JIRO ENJOJI

Born on Apr. 3, 1907

Present Titles:

– Senior Counsellor, Nihon Keizai Shimbun
– Chairman, Japan Atomic Industrial Forum

Education:

1933 Graduated from Waseda University (Department of Political Economy)

Professional Career:

1933 Joined Nihon Keizai Shimbun, Inc., publisher of the nation's foremost economic daily newspaper (then called The Chugai Shogyo Shimpo and later renamed The Nihon Keizai Shimbun), as a reporter
1942 Economic and political news editor
1946 Managing editor
1947 Director and managing editor
1954 Managing director and editor-in-chief
1965 Executive director and editor in-chief
1968 President and Cheif Executive Officer
1976 Chairman of the board
1980~ Senior Counsellor

Current Government Posts:

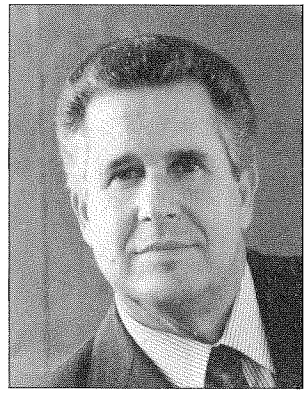
– Member of Advisory Committee for Energy
– Chairman of Petroleum Council
– Chairman of Central Social Insurance Medical Council
– Member of Industrial Structural Council

AKIKO SANTO

Date of birth: May 11, 1942
Place of birth: Tokyo, Japan

Present position:
Minister of State for Science and Technology;
Member of the House of Councilors (elected three times);
Member of the Council for Science and Technology;
Chairperson of the Atomic Energy Commission;
Chairperson of the Space Activities Commission;

1960
Graduated from Dept. of Literature, Bunka-Gakuin College
1974
Elected to the House of Councilors
1978 & 1979
Parliamentary Vice-Minister for Environment
1987
Chairperson, Special Committee on Environment, House of Councilors
1989 Chairperson, Committee
Chairperson, Committee on Foreign Affairs, House of Councilors



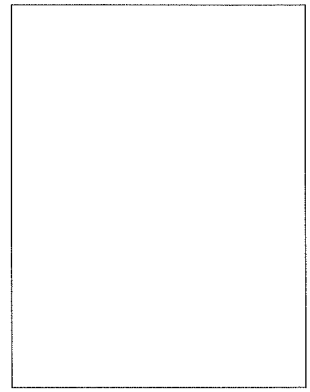
ANTONIO CARDOSO E CUNHA

Date of birth: 28 January 1934 –
Leiris – Portugal

Degree in chemical engineering at the Institute Superior Técnico (University of Lisbon)

Member of the Social Democratic Party

1957–1965
Technical career in chemical industry
1965–1976
Chairman and Managing Director of a group of private companies in Angola
1976–1978
Company Director of Industrial Mining and Agriculture Companies in Portugal
1978
Secretary of State of Foreign Trade
1978–1979
Secretary of State for Manufacturing Industry
1980–1981
Minister of Agriculture and Fisheries
1978–1985
Member of Portuguese Parliament
1986–1988
Member of the Commission of the European Communities responsible for Fisheries
Since 1989
Member of the Commission of the European Communities responsible for Energy



MARVIN RUNYON

Marvin Runyon was designated as the ninth Chairman of the TVA Board of Directors by President Ronald Reagan and took the oath of office on January 25, 1988.

Mr. Runyon chairs a unique Federal corporation with regional and national responsibilities. Although best known as one of America's largest electric power producers, TVA also manages the nation's fifth largest river system, operates a national laboratory devoted to agricultural and environmental research, and carries out a wide range of other resource development activities.

Mr. Runyon introduced a new way of doing business that resulted in the most extensive restructuring in TVA's history. He worked with his Board colleagues to make TVA more competitive, efficient, and accountable, instilling a corporate commitment to service, quality, and change.

Mr. Runyon came to TVA after serving since 1980 as President and Chief Executive Officer of Nissan Motor Manufacturing Corporation U.S.A. He supervised construction and operation of Nissan's Smyrna, Tennessee, facility that Fortune magazine called one of the ten best-managed manufacturing plants in the United States.

Mr. Runyon is active in many civic and professional organizations. A current participant in Leadership Memphis, he also has taken part in Leadership Nashville and Leadership Knoxville. In 1991, Mr. Runyon was named to the Society of International Business Fellows.

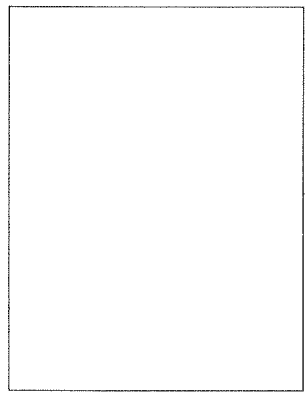
Mr. Bunyon was born in Fort Worth, Texas, on September 16, 1924. He received the B.S. degree in management engineering from Texas A&M University.

SESSION 1

Chairman

TSUTOMU WATAMORI

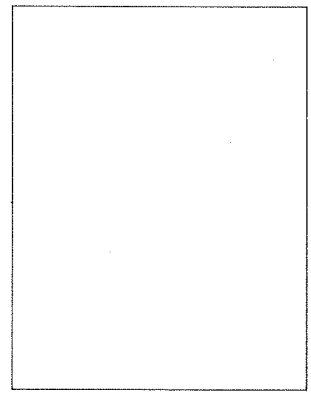
Present Occupation:
Vice Chairman, Japan Atomic Industrial Forum;
Attending Advisor, Hitachi Ltd.
Date of Birth: January 20, 1914
Degrees:
Bachelor of Machinery Engineering, 1937, the University of Tokyo
Professional Career:
1937. 4
Joined Hitachi, Ltd.
1962. 2
Deputy General Manager, Hitachi Works
1967. 11
Director & General Manager, Industrial Processes Group, Head Office
1969. 11
Board Diector & General Manager, Hitachi Works
1972. 5
Executive Managing Director & General Manager, Hitachi Works
1973. 11
Executive Managing Director & Group Executive, Power Generation & Transmission Group, Head Office
1975. 5
Senior Exec. Managing Director
1977. 6
Exec. Vice-President & Director
1980. 9
Retired from Hitachi, Ltd.
1980. 10
Prisident, New Energy Development Organization
1986. 9
Retired from New Energy Development Organization
1986. 10
Advisor Hitachi, Ltd.
1988. 6
Vice Chairman, Japan Atomic Industrial Forum



BORIS A. SEMENOV

Deputy Director General
Head of the Department of Nuclear Energy and Safety
International Atomic Energy Agency

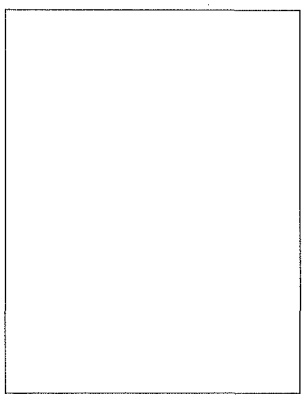
Dr. Semenov graduated from the Moscow Institute for Physics and Engineering in 1955, he has a PhD in Nuclear Engineering. He started his scientific career in 1955 in the research laboratory at the first nuclear power plant in Obninsk where he also obtained certificates as Operator, Seniro Operator and Shift Supervisor. As scientific Worker, Senior Scientific Worker and Head of Laboratory, he was engaged in research and development on graphite-water cooled, PWR and fast reactor-type reactors. From 1961 to 1966 he worked as Senior Officer in the Division of Nuclear Power and Reactors at the International Atomic Energy Agency (IAEA). From 1969 to 1981 he was Deputy Head of a Department at the State Committee for the Utilization of Atomic Energy in the USSR (SCUAE). In 1981 he was appointed Deputy Director General, Head of the Department of Nuclear Energy and Safety (until 1984). Before returning to the Agency in the same position in April 1989, he worked as Deputy and First Deputy Chairman of the SCUAE and was Governor from the Soviet Union in the Board of Governors of the IAEA.



VITALY F. KONOVALOV

Born on September 14, 1932 in Sverdlovsk. He is of Russian nationality. In 1956 graduated from the Ural Politechnic Institute as engineertechnologist. All his history of employment has been connected with nuclear industry.
1956–1975
Engineer at metallurgical plant in the Urals (Ministry of Medium Machine Building)
1975–1979
Director of Chepetsk mechanical plant (Ministry of Medium Machine Building)
1979–1986
Director of Industrial Association "Machine building plant" (Ministry of Medium Machine Building)
1986–1988
Head of the main department at the Ministry of Medium Machine Building
1988–1989
Deputy Minister of Medium Machine Building
from 1989
USSR Minister of Nuclear Power and Industry

Mr. V. F. Konovalov is Doctor of technical sciences, decorated with various State awards and prizes.



TOM A. HENDRICKSON

Tom A. Hendrickson was appointed Principal Deputy Assistant Secretary for Nuclear Energy, Office of Nuclear Energy, U.S. Department of Energy on December 30, 1990.

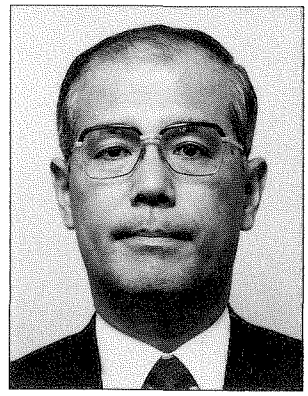
The Office of Nuclear Energy is responsible for DOE test and research reactor operation, advanced civilian reactor development and design, advanced space and defense nuclear isotope and power systems, the U.S. uranium enrichment enterprise, It also develops, interprets and coordinates nuclear safety policy for all DOE reactors and nuclear facilities.

Mr. Hendrickson has more than 30 years of experience in government and industry, predominately in the nuclear energy field. Prior to joining DOE, he was President and Chief Executive Officer of Magnetic Bearings, Inc.

Between 1957 and 1972, Mr. Hendrickson held positions of increasing responsibility in the Naval Nuclear Propulsion Program, a joint program of the former Atomic Energy Commission and the Department of the Navy.

Mr. Hendrickson earned a Bachelor of Arts degree in Phsyics from Harvard University and a Master of Science degree in Physics from Georgetown University. He is a graduate of the Westinghouse Bettis Reactor Engineering School, and he served as a n officer in the U.S. Navy for seven years.

Mr. Hendrickson is a Registered Professional Engineer in New York and New Jersey. He is a member of the American Nuclear Society, the American Society of Mechanical Engineers and the American Physical Society.



KENJIRO OGATA

Director-General, Agency of Natural Resources and Energy

Born: September 8, 1937

1960 Graduated from the University of Tokyo, Degree in Law

1960 Joined the Ministry of International Trade and Industry

1978 Dir., Gas Utility Industry Div., Agency of Natural Resources and Energy, MITI

1980 Secretary to the Minister of International Trade and Industry

1981 Dir., Iron and Steel Administration Div., Basic Industries Bureau, MITI

1983 Dir.-Gen., General Administration Dept., Japan National Oil Corporation

1984 Dir., Budget and Accounts Div., Minister's Secretariat

1985 Dept. Dire.-Gen., International Trade Administration Bureau, MITI

1986 Dep. Dir., Industrial Location and Environmental Protection Bureau, MITI

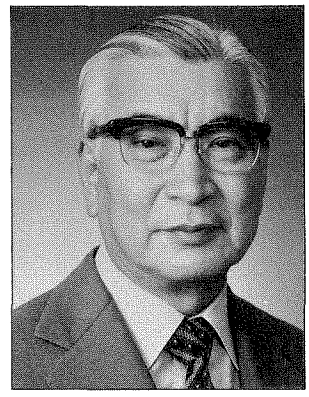
1987 Dep. Dire.-Gen., Nuclear Safety Bureau, Science and Technology Agency

1988 Dir.-Gen., Science and Technology Promotion Bureau, Science and Technology Agency

1989 Dir.-Gen., Atomic Energy Bureau, Science and Technology Agency

1990 Dir.-Gen., Agency of Natural Resources and Enegy, MITI

Chairman



FUMIO WATANABE

Title:

Vice Chairman of Japan Atomic Industrial Forum
Chairman of Japan Air Lines Co., Ltd.
Counsellor of the Tokio Marine and Fire Insurance Co., Ltd.
Vice-President of Japan Association of Corporate Executives
Chairman of Committee on Information and Telecommunication Policy of Japan Federation of Economic Organizations

Date of Birth: 28th March, 1917

Qualification:

Bachelor of Economics
Graduated from the University of Tokyo in March, 1939

Career Record:

(Japan Atomic Industrial Forum)
June 1986:
Appointed as Vice Chairman
(The Tokio Marine and Fire Insurance Co., Ltd.)
April 1939:
Jointed the Tokio Marine and Fire Insurance Co., Ltd.
July 1977:
Appointed as Executive Vice President
July 1978:
Appointed as President
July 1984:
Appointed as Chairman
June 1988:
Appointed as Counsellor
(Japan Air Lines Co., Ltd.)
June 1988:
Appointed as Chairman

Hobbies:

Playing golf, Go games, Contract bridge

TIMOTHY WALKER

Head of Atomic Energy Division, Department of Energy, and UK Governor of International Atomic Energy Agency since 1989;

Born: 27 July 1945; married – 3 daughters

Education: Tonbridge School; Brasenose College, Oxford, BA Chemistry (1st Class Hons) 1967, MA, DPhil 1969.

Harkness Fellow, Commonwealth Fund of New York, 1971, University of Virginia, 1971 and Northwestern University, 1972; Consultant Argonne National Laboratory 1972; Strategic Planner, Greater London Council, 1974;

Principal, Department of Trade 1977; Sloan Fellow (with distinction), London Business School; 1983;

Assistant Secretary: Department of Trade and Industry, 1983; Director (Admin.), Alvey Programme, 1983;

Head, Policy Planning Unit, 1985;

Principal Private Secretary to sucessive Secretaries of State for Trade and Industry, 1986;

Under Secretary, 1987; Director, Information Engineering Directorate, 1987;

Non-executive Director, ICI Chemicals and Polymers Ltd. 1988-89;

Publications: Contributions to scientific journals;

JAN JICHA

Deputy Minister of Fuel and Energy
Federal Ministry of Economy
The Czech and Slovak Federal Republic

Born on May 23, 1950

Nationality: Czech

Education:
1968 Grammar School
1973 Czech Technical Univ. Power generation
1979 Nuclear Physics Univ.

Employment:
1975 Designer
1985 Czech Power Utility
1988 Site Manager of Nuclear power plant
1989 Czech Power Utility Deputy Manager General

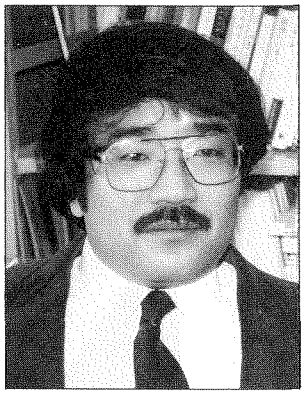
REMY CARLE

Born: March 9th, 1930, in Paris
Education: Ecole Polytechnique (X 51) and Ecole Nationale Supérieure des Mines de Paris (1954).
Deputy General Manager of Electricité de France
President of the Supervisory Board of the Centrale Nucléaire Européenne à Neutrons Rapides
Member of the Board of the French Atomic Energy Commission
Member of the Steering Committee of International Union of Producers and Distributors of Electrical Energy (UNIPEDE)
Member of US Council for Energy Awareness (USCEA)
Principal position occupied
– Between 1957 and 1976 at the French Atomic Energy Commission (CEA)
Director of the Reactor Construction Division (1971)
Chairman of the Societé Technique pour l'Energie Atomic (TECHNICATOME) (from 1972 to 1976)
Chairman of the Compagnie pour l'Ingéniérie des Réacteurs refroidis au Sodium (CIRNA) (from 1974 to (1978)

– Between March 1976 to date at Electricité de France (EDF)
Assistant Director of the Generation and Transmission Division, Head of the Nuclear and Fossil Generation Department (from 1979 to 1978)
Member of General Management (from 1979 to 1982)
Director of The Engineering and Construction Division (from 1982 to 1987)
Deputy General Manager (since July 1987)

SESSION 2

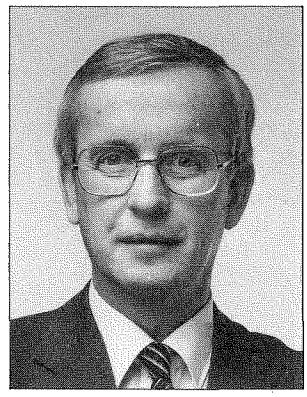
Chairman



TAKAMITSU SAWA

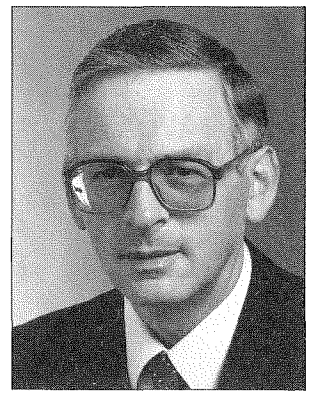
Director, Institute of Economic Research, Kyoto Univ.
Doctorate in Economics from Univ. of Tokyo
Major: Econometrics

1942 Born in Wakayama, Japan.
1965 Graduated in Faculty of Economics, Univ. of Tokyo.
1967–69 Assistant, Faculty of Economics, Univ. of Tokyo.
1969–80 Associate Professor, Kyoto Univ.
1970–71 Research Fellow, Stanford Univ.
1975–78 Visiting Professor, Illinois Univ.
1980–now Professor, Kyoto Univ.
1990–now Director, Institute of Economic Research Kyoto Univ.



KARL-AXEL EDIN

Title: Dr.
Date of birth: March 6, 1937
Place of birth: Boden
Nationality: Swedish
Perm. address: Huddinge
Education: Phd in Theoretical Physics 1970
Occupation: Managing director of Kraftsam. Kraftsam is a joint organization of electricity producers in Sweden.
Employment history:
Ministry of Industry 1975–1983
National Energy Administration 1983–1989
Kraftsam 1989 –



EDUARD KIENER

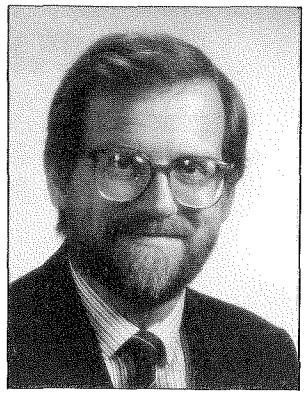
Born: In Berne the 25th October 1938

Nationality: Swiss

Place of origine: Birrwil

Studies: Schools in Berne
1958–62
Swiss Federal Institute of Technology in Zurich, Mechanical Engineer Diploma in 1962
1963–69
Study of Economics and Management at the Unviersity in Berne: Licentiate 1969, Doctorate 1971

Professions:
1962–63
Research Department in a Swiss Machine Producing Company in Berne
1963–73
Full-time teacher at the Technical College in Berne
1969–72
Assistant at the University in Berne
1973–75
Central Office of the Organisation in the Federal Administration
1975
Head of Staff, General Energy Commission
1976
Deputy Director of the Swiss Federal Office of Energy
1977
Director of the Swiss Federal Office of Energy



PETER E. ÅSELL

Private political advisor to the Swedish Minister of Industry.

Born on the 28th of August 1945 in Sölvesborg, Sweden.

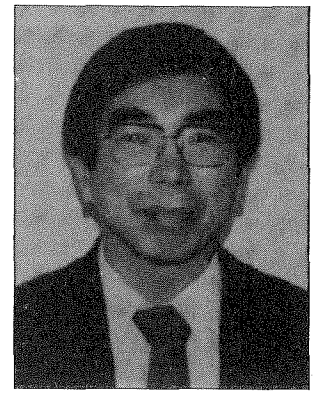
Studies of economics and administration at the Gothenburg School of Economics. Graduated in 1970. Completing studies of Sociology and Psychology at the University of Gothenburg.

During the 1970-ies auditor in the National Audit Bureau. Specialized in effectiveness auditing.
Developing new methods for evaluating and promoting effectiveness in the public sector. Analyses concentrating on the Judicial sector and the sector of Industrial Policy. During first half of the 1980-ies responsible for evaluation of research and development in the Swedish National Board for Technical Development.

In 1986 Mr. Åsell took a position as expert of energy policy in the Swedish Trade Union Confederation. When the Vice Chairman of the Confederation in January 1990 was appointed Minister of industry, including energy policy, Mr. Åsell was appointed his personal advisor on energy matters.

PETER HÄHLEN

Date and place birth:
December 18, 1942/Lenk (Switzerland)
Nationality: Swiss
Permanent Domicile:
Berne, Switzerland
History of Degrees of Education:
Diploma in theoretical physics 1970 (University of Berne)
PhD in theoretical physics 1974 (University of Berne)
Occupation:
Secretary General of the Swiss Association for Atomic Energy (SVA)
History of Employment:
1963-70 Assistant physics teacher at various bernese schools
1968-74 Teaching and research assistant at the Institute for Theoretical Physics, University of Berne
1974-75 Visiting scientist at the International Centre for Theoretical Physics (ICTP), Trieste/Italy under the auspices of the IAEA and UNESCO
1975-78 Postdoctoral research fellow sponsored by the Swiss National Foundation for Scientific Research at the University of Berne, working on Quantum Field Theory and Phenomenological Particle Physics
1978–1984 Deputy Secretary General, since 1984 Secretary General of the Swiss Association for Atomic Energy



YOICHI KAYA

Date of Birth: May 18, 1934
Education and Degrees:
1959 M.A. (Engineering), the University of Tokyo
1962 Doctor of Engineering, the University of Tokyo
Teaching and Research:
1963–74 Associate Professor, The University of Tokyo
1974–78 Associate Professor, Engineering Research Institute, The University of Tokyo
1978–present Professor, Department of Electrical Engineering, The University of Tokyo
1963–64 Instructor, Department of Aeronautics and Astronautics, MIT
1971–72 Visting Research Fellow, Battelle Memorial Institute
Research Activities:
1957–70 Mainly control theory and applications, especially on the methodology of process identification
1970–present System analysis and modeling of energy systems and social systems
Present Activities in the
- Project leader, energy system study, Ministry of Education, Science and Culture
- Advisor, Science and Technology Agency
- Member of the transportation policy committee, Ministry of Transmportation

Present International Activities
- Alternate Council Member, International Institute of Applied Systems Analysis (IIASA)
- Vice-Chairman, Economic and Management Committee, International Federation of Automatic Control (IFAC), etc.

LUNCHEON REMARKS

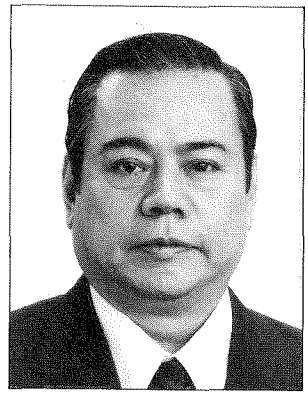
SUSUMU YODA

Present Position:
Executive Vice President
The Tokyo Electric Power Co., Inc. (TEPCO)
No. 1-3, 1-chome, Uchisaiwai-cho, Chiyoda-ku, Tokyo 100, Japan

Date of Birth:
November 4, 1930

Education:
1954 Graduated from Department of Economics, Yokohama National University

Professional Career:
1954 Joined Tokyo Electric Power Co., Inc.
1979 General Manager of General Planning Department
1981 Director, General Manager of General Planning Department
1981 Director, General Manager of General Planning Department
1985 Managing Director
1989 Executive Vice President

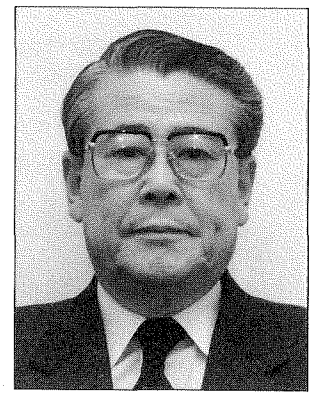


EIICHI NAKAO

Date of Birth: January 27, 1930

Career:
1953 Graduated from Aoyama Gakuin University, Faculty of English Literature
1959 M.A. Waseda University, Faculty of Social Policy
1967 Elected to the House of Representatives
1972 Parliamentary Vice-Minister of Agriculture and Forestry
1976 Director, Agriculture and Forestry Division, LDP
1978 Chairman, Standing Committee on Agriculture, Forestry and Fisheries, House of Representatives
1979 Chairman, Standing Committee on Foreign Affairs, House of Representatives
1982 Chairman, National Organization Committee, LDP
1986 Chairman, Research Commission on Economics and Commodity Prices, LDP
1987 Minister of State for Economic Planning
1989 Chairman, Special Committee on External Economic Cooperation
Chairman, Committee on Budget, House of Representatives
1990 Minister of International Trade and Industry

Interests: Reading, Swimming



IKUO HIRAYAMA

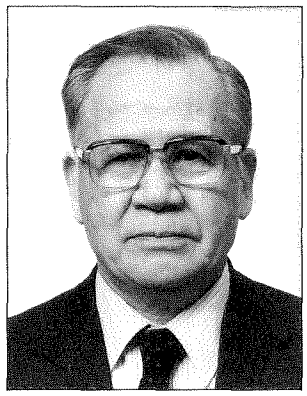
Date of birth: June 15, 1930
Educational background:
Mar. 1952
Department of Japanese Painting at the Tokyo School of Fine Arts

Employment record:
Apr. 1969
Assistant Professor of the Tokyo National Univ. of Fine Arts and Music
May 1973
Professor of the Tokyo National Univ. of Fine Arts and Music
Apr. 1988
Dean, Faculty of Fine Arts of the Tokyo National Univ. of Fine Arts and Music
Nov. 1988
Designated Japan's first Goodwill Ambassador to UNESCO
Dec. 1989
President of the Tokyo National Univ. of Fine Arts and Music

Major Achievement:
Sep. 1962
Exhibited the Resurrection of the Buddha and the Holy Dream of Conception in the 47th JAI (Japan Art Institute) Exhibition and the latter received the JAI and Taikan Yokoyama Awards.
May 1976
The Grand Prize of the Japan Arts was awarded to the latest works shown at the Silk Road Exhibition by the Association for the Promotion of the Arts, organized by Shinchosha.
Sep. 1978
Exhibited the arts Seison Maeda ascending to paradise in the 63th Exhibition, and it received the Prime Minister's Award.

SESSION 3

Chairman



EIZO TAJIMA

Born on April 28, 19

President, Nuclear Safety Research Association (NSRA)

1938
Graduated from Tokyo Univ. of Education

1938 - 1953
Joined Institute of Chemical and Physical Researches

1953
Professor, St. Paul's Univ.

1955
Lecturer, Univ. of Tokyo

1965
Director, NSRA

1972 - 1974
Commissioner, Nuclear Safety Commission

1978 - 1987
Commissioner, Atomic Energy Commission

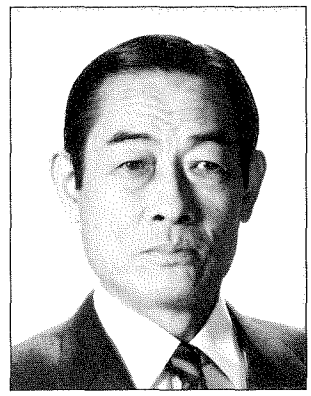
1979 -
Professor Emeritus, St Paul's Univ.

1985 -
Commissioner, ICRP

1988 -
President, NSRA

SESSION 4

Chairman



RYOJU KATSUBE

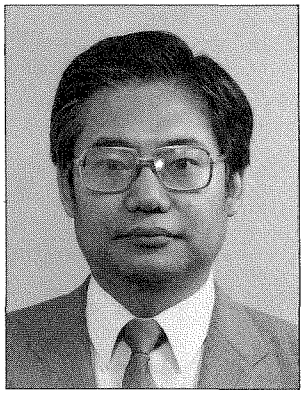
TV Caster, NHK Enterprises

1931 Born in Shimane Pref.
1954 Graduated from Dept. of American and English Literature, Aoyama Gakuin University. Joined NHK (Japan Broadcasting Corp.)
1977– News Caster of "News Center 9"
1979– TV Caster of "NHK Special" TV Caster of the programs on oil, nuclear energy, food, high-technology, computers, etc.
1988 Retired from NHK and joined NHK Enterprises.

Publications:
"The Antarctica"
"Nuclear power"
"Food – warning from the Earth"
"The profile of Japan as the big country of technology"
"Food – the subject for this country"
"Computers change the world"

TEIICHI YAMAMOTO

Feb. 16, 1938
Born in Ishikawa Prefecture
Mar. 1961
Graduated from Faculty of Law University of Tokyo
Apr. 1961
Joined Ministry of International Trade and Industry
Mar. 1977 –
Counsellor, Embassay of Japan to U.S.S.R.
May 1980 –
Director of Electric Power Development Div., Agency of Natural Resources and Energy, MITI
Sep. 1981 –
Director of Planning Dept., New Energy Development Organization
Jan. 1983 –
Director of Economic Cooperation Div., MITI
Jun. 1986 –
Councilor, Minister's Secretariat, MITI
Jun. 1989 –
Director of General Coordination Dept., Agency of Industrial Science and Technology, MITI
Jun. 1990 –
Director General, Atomic Energy Bureau Science and Technology Agency



SHUNSUKE KONDO

Personal:
Date of Birth: July 26, 1942
Place of Birth: Sapporo, Hokkaido, Japan
Marital Status: Married, two children

Education:
Bachelor in Nuclear Engineering, 1965, University of Tokyo
Master in Nuclear Engineering, 1967, University of Tokyo
Ph. D. in Nuclear Engineering, 1970, University of Tokyo

Occupational Experience:
Lecturer:
Department of Nuclear Engineering, University of Tokyo (1970–1972)
Associate Professor:
Department of Nuclear Engineering, University of Tokyo (1972–1984)
Professor:
Nuclear Engineering Research Laboratory, University of Tokyo (1984–1988)
Professor:
Department of Nuclear Engineering, University of Tokyo (1988–)
Advisor to Atomic Energy Commission (1979–)
Advisor to Nuclear Safety Commission (1978–)
Advisor to Ministry of International Trade and Industry (1980–)
Advisor to Science and Technology Agency (1980–)

Research Interest:
Nuclear Reactor Design, Nuclear Reactor Safety, Human Interface Design, Nuclear Energy Policy, Science and Technology Policy

FUYUKO KAMISAKA

Writer and Social critic

Director, Social and Economic Congress of Japan

She graduated from Nagoya Bunka College, Japan.

She is active in writing about histories after the Second World War and issues of ladies.

NORIKO KIMOTO

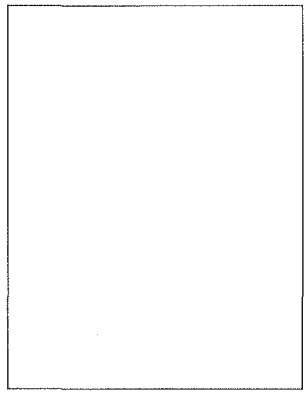
Social critic, TV commentator.

She was born on December 19, 1932 in Hokkaido and brought up in China.

She graduated from Faculty of Literature and Faculty of Law at St. Paul's University (Tokyo) and joined Tokyo Broadcasting System Co. in 1956.

After leaving TBS, she has been involved in various activities dealing with issues of education, female affairs, energy, politics, agriculture, etc. She is the author of numerous books and publications.

She now holds the membership of committies of the following;
Ministry of Education, Science; and Culture;
Ministry of International Trade and Industry;
Ministry of Agriculture, Forestry and Fisheries;
Science and Technology Agency;
Japan Atomic Energy Relations Organization, etc.



HIROTADA HIROSE

Education:
- BA : (Psychology) University of Tokyo, 1968
- MA: (Psychology) University of Tokyo, 1970
- Ph.D.: (Psychology) University of Tokyo, 1988

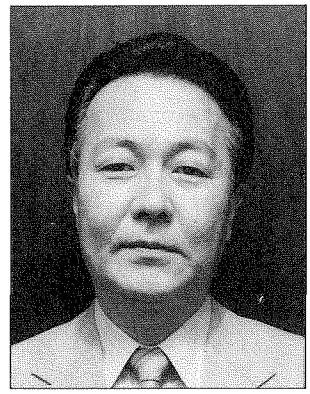
Position:
Professor of Psychology, Tokyo Woman's Christian University

Honor:
Selected as a "Young Psychologist" (International Psychological Congress in 1972)
Fulbright Researcher (1983-1984)
The Japanese Psychological Association Award (Outstanding Article, 1987)

Committee Memberships:
International Journal of Mass Emergencies Disasters (Executive Board)
The Task Force of AIDS Education and Public Relations (The Ministry of Public Welfare)
The Committee of Ethical Code (The Japanese Psychological Association), etc.

Recent Publication Books:
"Politics of Acid Rain." NHK Books (1990)
"Challenge to AIDS: Patients, Scientists, Media and Society." Shinyosha Publishing Co. (1989)

Articles
A cross-cultural study of risk control in disaster situations. The Bulletin of the Institute of Comparative Culture, Tokyo Woman's Cristian University, (1990)
Sociology of AIDS panic. OMNI (Japanese edition) (1987)
The psychological impact of the Tokai Earquake prediction: Individual's responses and mass media's coverage. Japanese Psychological Research, (1986)



YOSHIO MATSUI

Sept. 2, 1937 Born in Tokyo

Apr. 1962
Joined the Yomiuri Shimbun (Newspaper)

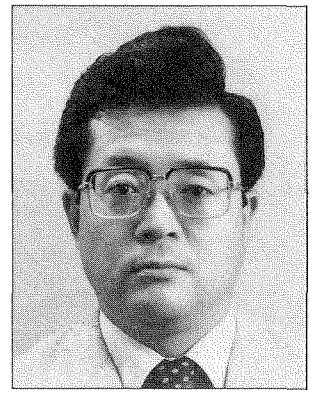
May 1968
Women's and Livelihood News Dept.

Mar. 1969
Economics News Dept.

Aug. 1982
Ediotorial Writer

Jun. 1988
Editor of Economics News Dept.

Japan. 1991
Deputy Managing Editor;
Editor of Comment & Analysis Dept.



TERUAKI MASUMOTO

Date of birth: May 12, 1938

Mar. 1962
Graduated from Dept. of Economics, Waseda Univ., Tokyo.

Apr. 1962
Joined Tokyo Electric Power Co., Inc.

Jul. 1981 – June 1984
Manager, Public Relations Dept.

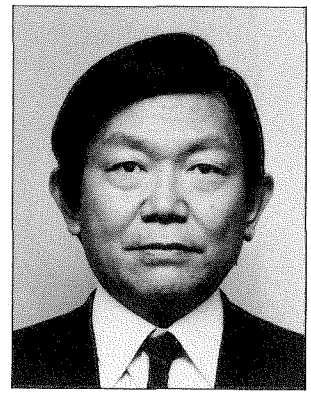
Dec. 1985 –
General Administration Manager, Public Relations & Information Dept., Federation of Electric Power Companies

SESSION 5

Chairman

SOICHIRO TAHARA

Born in 1934 in Hikone City, Shiga Prefecture. Graduated from Waseda University. After Working for Iwanami Movies and Tokyo Channel 12 TV (currently TV Tokyo Channel 12), is now active as a non-fiction writer and critic.



KAORU YOSANO

Born in Tokyo on August 22, 1938

Graduated from Faculty of Law Univ. of Tokyo

Dec. 1976
First elected to the House of Representatives

Jun. 1980 & Dec. 1983
Reelected to the House of Representatives

Dec. 1984
Parliamentary Vice Minister of International Trade and Industry

Jul. 1986
Reelected

Apr. 1988
Chairman, Committee of Commerce and Industry, LDP

Feb. 1990
Reelected

Jan. 1991
Vice Chairman, Diet Policy Committee, LDP;
Director, Steering Committee, House of Representatives

ANN S. BISCONTI

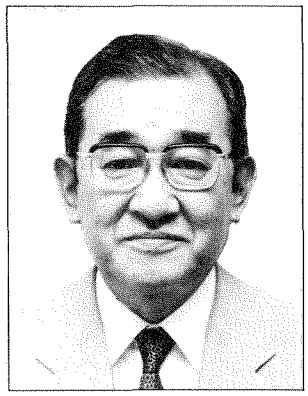
Ann Bisconti is Vice President for Research and Program Evaluation with the U.S. Council for Energy Awareness.

She was previously Director of the National Center for Allied Health Leadership and Vice President of Human Resources Policy Corporation. She is the author of five books and numerous other publications.

With USCEA, for the past 8 years, Dr. Bisconti has directed a wide range of public attitude and communications research to guide strategy development and evaluate program effectiveness.

Education:
Harvard University (Radcliffe College) 1958–60, McGill University 1960–62, Honors B.A. in sociology and anthropology, The Union Institute 1975–78, Ph.D. in social science research.

Personal:
Born November 22, 1940, Chicago, Illinois, USA, U.S. citizen.



SHIGERU ITO

Member of the House of Representatives;
Chairman of the Policy Board
Socialist Party of Japan

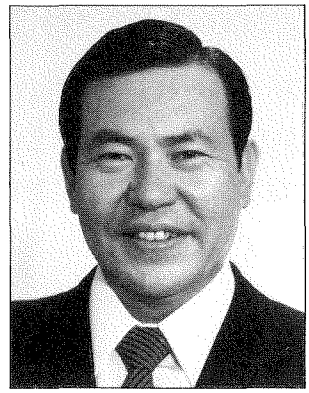
Born in Yamagata Pref. in 1928.

Graduated from University of Tokyo.

Elected to the House of Representatives from Kanagawa Pref.

Positions:

Member, Committee on Judicial Affairs, House of Representative
Ex-Director, National Movement Bureau, Socialist Party of Japan



MIKIO OOMI

Born in Osaka on Oct. 1, 1935

Mar. 1962
Graduated from Department of Economics, Kansai Univ.

Apr. 1963
First elected to Municipal Assembly of Osaka

Jan. 1967
First elected to the House of Representatives

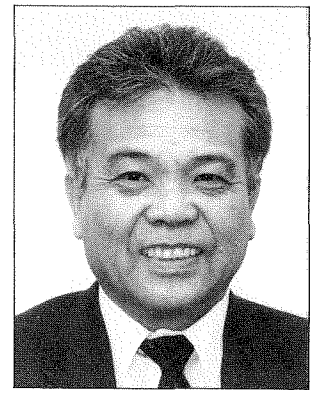
Jan. 1976
Vice Chairman, Diet Policy Committee, Komeito

Dec. 1983
Director, Small and Medium Enterprises Bureau, Komeito

Dec. 1986
Member, Central Executive Committee, Komeito;
Director, Steering Committee House of the Representatives

Dec. 1987
Chairman, Special Committee on Traffic Safety, House of Representatives

Nov. 1991
Director, Committee on Science and Technology, House of Representatives



HIROSHI KIKUNAMI

Born in 1935 and studied at Faculty of Ecnomics, Kyoto University.

Joined International Dept. of Central Committee, Japanese Communist Party in 1967.

Experienced Directorship of International Affairs, JCP.

Present position:
Member of Presidium of Central Committee, JCP
Chairman of Policy and Propaganda Commission, JCP

EIICHI NAGASUE

1941
Graduated from Faculty of Law University of Tokyo

1947 - 1955
Member, Municipal Assembly of Kyoto (2 terms)

1955 - 1959
Member, Prefectural Assembly of Kyoto (1 term)

1941 - 1959
Lecturer, Doshisha Univ. and Takushoku Univ.

1959
Elected to the House of Councilors

1963 - now
Eleted to the House of Representatives (9 terms)

Apr. 1985
Vice Chairman, Democratic Socialist Party

Feb. 1989
Chairman, Democratic Socialis Party

Apr. 1990
Advisor, DSP

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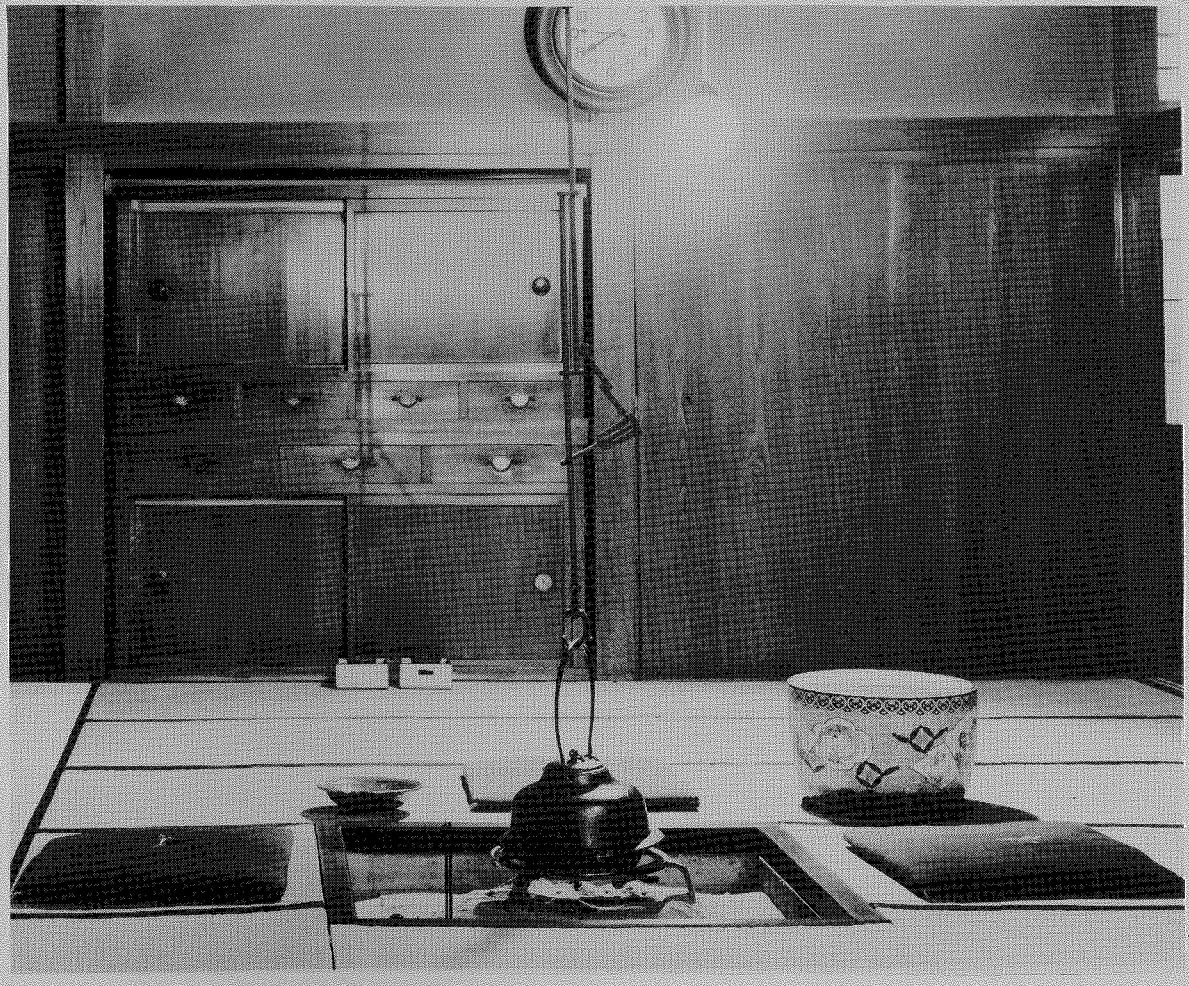

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Phone: (03) 3212-3111 Telefax: (03) 3212-9857 Cable Address: HISHIJU TOKYO Telex: J22443

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