Summary Report

Visit of Science and Technology Mission from Japan

7-16 November 1973

Ministry of State
Science and Technology

Ministère d'État
Sciences et Technologie

Science and Technology Mission from Japan 7 - 16 November 1973

Summary Report

prepared by the
Bilateral Cooperation Division
Ministry of State for Science and Technology

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BACKGROUND

The visit of the Japanese Science and Technology Mission arose from the earlier visit of a Canadian Science and Technology Mission to Japan in March 1972, and the agreement at that time that senior officials of both countries should meet on a regular basis to promote scientific and technical cooperation and exchanges. Canada accordingly invited a return Mission from Japan in April 1973. It was anticipated that senior governmental, industrial and university representatives would be included in this initial Japanese Mission, as had been the case with the earlier Canadian Mission. It was proposed, therefore, that a small working group from Japan might visit Canada during the summer to agree on appropriate topics of mutual interest and plan the associated discussions and visits, with the Mission itself arriving in the autumn of 1973.

The Japanese Ministry of Foreign Affairs subsequently indicated that Japan could not send a large-scale Science and Technology Mission, including non-government members as proposed by Canada, but would be prepared to consider sending a small group of government officials in the last quarter of 1973 to exchange views with Canadian government officials on ways to promote bilateral cooperation in science and technology and its industrial applications. After inter-departmental discussions in Canada, this counter-proposal was accepted. A Mission consisting of the following six members was subsequently appointed by Japan.

MEMBERS OF THE MISSION

Shun Yasuo (Head of Mission)	Science Counsellor Science and Technology Agency
Kunihiko Saito	Head, Second North American Division American Affairs Bureau, Ministry of Foreign Affairs
Kiyoshi Hasegawa	Associate Senior Officer for Development and Program, Agency of Industrial Science and Technology Ministry of International Trade and Industry
Yoshio Nakamura	Deputy Head, International Science Division, Higher Education and Science Bureau, Ministry of Education
Mitsuyoshi Komamura	Deputy Director, Water quality Control Division, Water Quality Bureau, Environment Agency
Nobuyasu Abe	Second North America Division, American Affairs Bureau, Ministry of Foreign Affairs.

OBJECTIVES

The purpose of the Mission was to review Canadian activities and facilities in selected areas, to identify mutual interests within these areas and to discuss with Canadian government officials the most appropriate procedures for initiating and furthering bilateral relations in science and technology between the two countries.

DISCUSSIONS AND VISITS

The areas selected for review during the visit of the Mission included the organization of science in Canada and the role of the Ministry of State for Science and Technology, science policy formulation, technological forecasting and technology assessment, scientific and technical information programs, space programs and policy in Canada, marine science and technology, environmental protection and water pollution control, fisheries aquaculture, nuclear energy, remote sensing techniques and facilities, technical innovation and development in industry, reciprocal relations in communications sciences, the support of academic research, and cooperation in transportation research and development. These were developed from topics identified during Canadian inter-departmental meetings in February and March 1973 (see Appendix 2) and from subsequent proposals by both Japanese and Canadian departments and ministries.

Accordingly, discussions were held in Ottawa with officials of the Ministry of State for Science and Technology, the Department of External Affairs, the Department of the Environment, the Department of Industry, Trade and Commerce, the Department of Communications, the National Research Council and the Canada Centre for Remote Sensing.

Visits in Ottawa included the Division of Building Research and the Computer-Aided Learning Laboratory of the Division of Radio and Electrical Engineering of the National Research Council, and the Canada Centre for Remote Sensing. Further discussions of nuclear power development in Canada, water pollution control, transportation, fisheries aquaculture, and marine science and technology took place during visits to the Pickering Nuclear Power Station in Toronto, the Canada Centre for Inland Waters in Burlington, the Transportation Development Agency and the Canadian National Railways Research Centre in Montreal, and the Marine Sciences Directorate of the Department of the Environment in Victoria. The program for these discussions and visits is included under Appendix 3.

SUGGESTIONS FOR COOPERATION

During the course of these discussions and visits, the following specific areas of cooperation were suggested:

1. *Ministry of State for Science and Technology:*

   a. Science policy development—exchanges of information;

   b. Technology assessment—joint comparison of methodologies for technology assessment and joint development of assessment models.

2. *Department of the Environment:*

   a. Fisheries aquaculture—exchanges of information and personnel to further each country's knowledge of the biology of aquaculture and of the design of structures for culturing aquatic organisms;

   b. Marine science and technology;

   c. Water pollution control.

3. *Department of Communications:*

   a. Cooperation and exchanges of information in satellite communications, fibre optics and computer communications;

      (Concern was also expressed over the apparent lack of interest in Japan of Canadian industrial communications technology and in Canadian advanced technology in general.)

4. *National Research Council:*

   a. Cooperation in exchanges of scientific personnel; (NRC reacted positively to a suggestion by the Mission that an agreement be negotiated with the Japan Society for the Promotion of Science for exchanges of scientific personnel in the natural sciences.)

   b. NRC willingness to continue cooperation in sounding rocket programs was indicated.

5. *Canada Centre for Remote Sensing:*

   a. Offer of assistance to Japan in training personnel in remote sensing techniques and in testing Japanese sensor equipment.

6. *Transportation Development Agency—Montreal:*

   a. Cooperation in demonstrating the feasibility of cargo electronic data processing systems, as applied to cargo movements between Canada and Japan;

   b. Cooperation in studies of the transportation of energy sources and in the optimum utilization of energy in transportation systems;

   c. Cooperation in the development of high speed, intercity, rail transit systems;

   d. Cooperation in studies of the application of magnetic levitation to rail transit systems;

   e. Cooperation in the development of electric automobiles for urban transportation;

   f. Collaboration in studies of the movement of bulk commodities by pipeline;

   g. Cooperation in the design of offshore structures for berthing large vessels. (The Mission indicated that Japan's Port and Harbours Research Institute has been instructed to proceed with this cooperative program.)

RESULTS

Prior to the departure of the Mission, its members met in Ottawa with representatives of the participating Canadian government agencies in order to review the more promising areas of mutual interest identified during the visit, and discuss what specific action should be undertaken to further the development of scientific and technological relations between Canada and Japan. In general, the members of the Mission indicated that they had been very favourably impressed by Canada's science and technology organization, by the activities and interests that had been described and by the facilities they had visited. Insofar as specific interests and proposals for co-operation were concerned, the Mission members were reluctant to make any firm commitments, on the grounds that the Mission lacked both the time to consider these fully and the relevant expertise in many of the areas that had been covered. It was stated that the Mission members would have to review the subjects of discussion more fully with their colleagues in Japan before any decisions could be reached on cooperative programs. The Mission made no proposal for an overall science and technology agreement or other formal commitment. It preferred that any cooperative programs between Canada and Japan be initiated, at least initially, on an ad hoc basis.

The Mission did indicate, however, that Japan would be prepared to exchange information with Canada on fisheries aquaculture, air and water pollution preventive technology, eutrophication of water bodies, and space communications. Questions of exchanges of personnel on marine research vessels and in the area of aquaculture would have to be reviewed in Japan since budgetary considerations were involved. (This need not, however, inhibit visits of related Canadian scientists to Japan.) The operating schedules of marine research vessels were to be provided by each country through its respective embassy.

The question of an agreement between the Japan Society for the Promotion of Science (JSPS) and the National Research Council (NRC) for exchanges of scientists was to be followed up with the JSPS by the Japanese Ministry of Education.

The Mission also stated that Japan would continue to cooperate with Canada in the utilization of research rocket facilities.

The Canadian proposals for cooperation in transportation studies would have to be reviewed further in Japan. Japanese participation in the Offshore Structures Projects had, however, recently been approved.

It was agreed that each country would, over the next several months, prepared information packages covering the various areas of discussion. These would then be forwarded through the embassies of each country for appropriate distribution.

The Mission indicated, too, that Japan would like to continue official-level meetings as necessary, to review the progress of cooperation in science and technology and assess new areas of mutual interest. It was suggested that the next meeting should be held in Tokyo in 1974 or early in 1975. Canada's views are to be communicated after interdepartmental consideration.

CONCLUSIONS AND RECOMMENDATIONS

1. Despite assurances that the Mission would be prepared to discuss specific areas of mutual interest, and an effort by Canada to define such areas beforehand, there was a lack of expertise within the Mission in many of the areas of discussion and a reluctance to express any definite views or commitments. The visit was, in effect, primarily exploratory in nature, with too few specialists concerned with too broad a range of subject matter for the size of the group. This may have satisfied Japan's requirements for information, but it did not substantially advance Canada's suggestions for cooperation, at least at this stage. It remains to be seen, however, what will develop after the Mission's consultations with colleagues in Japan.

2. The conclusion of the Canadian Science and Technology Mission to Japan, to the effect that Canada would be expected to take the initiative in putting forward specific proposals for cooperation, would still appear to be valid. The Japanese Mission suggested no specific areas of potential mutual interest arising from its visit. Several areas were suggested by Canada, but the Mission deferred comment pending subsequent discussions with colleagues in Japan. However, without more precise definitions of Canadian suggestions, Japanese agencies may find it difficult to assess their degree of mutual interest. Canadian participants should, therefore, maintain their initiative by defining their suggestions for cooperation more precisely, particularly in areas of primary interest to them.

3. Japan obviously does not wish to participate in large-scale, multidisciplinary science and technology missions on the scale of the Canadian Mission to Japan in 1972. It prefers to adhere to smaller, regular meetings of senior Japanese and Canadian officials to promote bilateral cooperation in science and technology, as was agreed during the visit of the Canadian Mission. Such meetings would be more productive if they were confined to two or three specific areas on each occasion and included specialists of sufficient experience and seniority to arrive at firm decisions and commitments. This would require a clear definition beforehand of exactly what areas are to be covered and what proposals within them are to be considered, which would in turn necessitate more preparatory work in the form of contacts between specialists in the two countries.

4. During the interdepartmental planning which preceded the arrival of the Japanese Mission, it became apparent that the science-based agencies of the federal government have been receiving a

considerable number of visiting groups from Japan. There was, however, no centralized source of information on these visits and the subjects of discussion. Such information is rather pertinent to discussions of overall relations in science and technology. The development of routine interdepartmental procedures for coordinating information on such visits, and for recording existing relations in science and technology, would be of considerable assistance during the discussions of future bilateral relations between Canada and Japan.

Note:

A detailed report of the discussions and visits associated with this Mission was distributed in draft form in January, 1974 to the Canadian participants. In view of its length (104 pp.), this detailed report will not be reproduced for general distribution. A limited number of copies, amended in accordance with comments received from the participating departments and agencies, will be available, for reference purposes, from the Bilateral Cooperation Division, Ministry of State for Science and Technology.

APPENDIX 1

CURRICULUM VITAE OF MEMBERS OF THE MISSION

SHUN YASUO Head of Mission

February 5, 1921	born in Yamaguchi Prefecture
March 1944	graduated from the Faculty of Agriculture, Tokyo University
May 1946	Agricultural Technical Official, Chugoku National Agricultural Experiment Station, Ministry of Agriculture and Forestry
April 1953.....	Chief, First Crop Disease Control Division, Central Agricultural Experiment Station, Ministry of Agriculture and Forestry
February 1962.....	obtained a Doctor's Degree of Agriculture
July 1965	Head, Plant Protection Division, Agricultural Administration Bureau, Ministry of Agriculture and Forestry.
February 1970.....	Head, Liaison and Coordination Division, Agriculture, Forestry and Fisheries Research Council, Ministry of Agriculture and Forestry
April 1971.....	Special Assistant to Director General, Agricultural Administration Bureau, Ministry of Agriculture and Forestry
July 1971	Director, Extension Department, Agricultural Administration Bureau, Ministry of Agriculture and Forestry
April 1972.....	Science Counsellor, Science and Technology Agency

KUNIHIKO SAITO

1935.....	born in Toyama Prefecture on February 2
1958.....	following graduation from the University of Tokyo (Faculty of Law), joined the Ministry of Foreign Affairs

1958-60.....	under foreign traineeship program studied at Cambridge University in England
1960-73.....	prior to the appointment as Head of the Second North America Division, American Affairs Bureau, in August 1973, served at the Embassies in Switzerland, Malaysia and France, and in North America Division and Treaties Division, the immediately preceding post being the Deputy Head of the Treaties Division

KIYOSHI HASEGAWA

1927.....	born
1954.....	after graduation from the Kumamoto University, (Mathematics, the Faculty of Science), joined the Ministry of International Trade and Industry (MITI)
1954-1973	main areas of his service in the MITI include: Deputy Director of Statistics Analysis Division; Director of Statistics Division, Toyama Prefectural Office; Officer for Development Program, Agency of Industrial Science & Technology; Director of Statistics Division, Institute of Asian Economic Affairs; Associate Senior Officer for Development Program. Agency of Industrial Science & Technology, MITI

YOSHIO NAKAMURA

1924.....	born on January 20
1946.....	Graduated from the Fisheries Department, Faculty of Agriculture, Tokyo Imperial University
1946.....	Research Assistant of the Fisheries Department,
1954.....	Secretary, Department of Health Care and Nursing, Faculty of Medicine, University of Tokyo
1962.....	Specialist, Science Division, Japanese National Commission for UNESCO
1967.....	Deputy Head, International Science Division, Higher Education and Science Bureau, Ministry of Education

MITSUYOSHI KOMAMURA

1934.....	born on March 7
1957.....	Graduated from the Agricultural Engineering Department, Faculty of Agriculture, University of Kyoto
1957-69.....	engaged in design and execution of agricultural irrigation facilities in the Direct Operation Office of the Agricultural Land Bureau, Ministry of Agriculture and Forestry
1969-71.....	Head, Construction Division, Yokaku-wan Bay Reclamation Works Office, Ministry of Agriculture and Forestry (Engaged in design and execution of reclamation works)
1971-72.....	Chief Designer, Agricultural Land Bureau, Ministry of Agriculture and Forestry (Direction of planning and execution of agricultural irrigation works)
1972.....	Deputy Director, Water Quality Control Division, Water Quality, Environment Agency

NOBUYASU ABE

1945.....	born in Akita Prefecture in September
1967.....	after studying at the University of Tokyo (Faculty of Law), joined the Ministry of Foreign Affairs
1967-69.....	under foreign traineeship program studied at Amherst College, Amherst, Massachusetts, U.S.A. (B.A.)
1969-72.....	prior to the assignment to the Second North America Division, served at the Embassy in Washington, D.C., U.S.A., and briefly in the Overseas Allowance Division

APPENDIX 2

SECTORS AND SUBJECTS OF INTEREST TO CANADA FOR POTENTIAL COOPERATION WITH JAPAN[1] APRIL 1973

1. AGRICULTURE

A. Animal Waste Management

Animal waste management and disposal programs are underway at five universities and two federal government research stations. They include studies on monitoring of surface drainage, water, odour, and on composting and utilizing the waste for production of methane gas.

B. Food Research

Current research program emphasizes oilseed, milk and horticultural process and development. Smaller programs are underway in meat and cereal technology.

C. Animal Research

Research program on dairy and beef cattle, sheep, swine and poultry is carried out across Canada. Studies include breeding, feedstuff evaluation, nutrient requirement, meat, milk and egg research and marketing.

D. Animal Diseases Research

The Health of Animals Branch of the Canada Department of Agriculture is the sole veterinary agency of Canada. It carries out animal disease control and eradication measures.

E. Research on Fruits and Vegetables

Research programs are ranging from plant breeding, crop management, mechanization and quality control through to fruit and vege-

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1. Compiled by the Ministry of State for Science and Technology from topics identified by science-based departments of the Federal government at interdepartmental meetings in February and March 1973.

table processing, product development and marketing. Research is made on tree fruits, berries and vegetables.

F. **Plant Protection Research**

Research programs deal with the development of control measures for insects and diseases of plants.

G. **Research Administration**

The Research Branch of the Department of Agriculture of Canada has adopted the system of "Management by Objectives" in order to meet the fast-changing requirement of modern agriculture. Directors as well as research scientists of Research Stations scattered all over Canada are well acquainted with the system.

2. COMMUNICATIONS

A. **Broadband Communications Systems**

1) *Wired City Pilot Project*

The integral part of this project is a programmable video simulation laboratory that acts as a focal point for experiments carried out by industry, university and government into the salient variables of audio/video communications services in the following areas:

a. Wired city applications;

b. Urban and regional planning;

c. Teleconferencing;

d. Information systems; and

e. Educational systems research.

This is a multidisciplinary research program in which the technological, sociological and economic variables are considered.

2) *Audio/Visual Systems*

This study program is devoted to developing and evaluating the relevant policies for guiding broadband systems (data, telephone, audio/visual, etc.) developing in Canada.

B. **Computer/Communications Systems**

1) *Computer Networks*

This program includes topological studies of networks and the planning for a network to interconnect the universities in Canada.

2) *Computer/Communications*

This project is concerned with the policy studies into the regulation of the combination of computers and data communications.

C. **Educational Technology**

The objective of this program is to provide information on the best transmission systems available for educational purposes. It will ensure that transmission systems including satellite broadcasting, cable television, interactive broadband computer communication systems and microwave systems will be selected to meet the educational requirements of all Canada at the lowest cost.

D. **Improvement of Organizational Effectiveness through Use of Telecommunications Technology (Teleconference)**

The Teleconference Canada Program is a mission-oriented activity designed to explore possible methods of utilizing new and existing communications technology in order to permit more effective communications on the part of Public Service managers.

Research is being carried out, within the Program context, in the following areas:

1) User needs analysis;

2) Examination of organizational communications patterns;

3) Development of systems (technical research);

4) Behavioural research; and

5) Evaluation (cost/benefit/user attitude).

3. COMPUTER SCIENCE

The following subjects have been identified as being of interest from the point of view of possible cooperation with Japan in the industrial application of science and technology:

A. **Pattern Recognition,** and

B. **Computer Software** (both systems and application).

4. ENVIRONMENTAL PROTECTION

The following topics are considered to be of interest to both Canada and Japan for joint investigation or exchange of information:

A. **Water Pollution Control Technology:**

1) Chloralkali;

2) Biological treatment;

3) Ethylene glycol de-icing;

4) Nitrification and denitrification;

5) Flocculation techniques;

6) "Paprizone" pulping process;

7) Bleachery water reuse;

8) Closed system kraft bleachery; and

9) HCl pickling liquor recycling.

B. **Solid Waste Reduction and Waste Pulverization**

C. **Air Pollution Control Technology:**

1) Pyrolysis;

2) Natural gas reduction of SO_2;

3) Air pollution index systems ; and

4) Motor vehicle emissions laboratory techniques.

5. FISHERIES

A. Aquaculture

Aquaculture should be considered in the context of systems for intensive rearing and controlled propagation of aquatic organisms (marine plants, invertebrates, as well as fishes). This consideration should encompass basic biological, engineering and oceanographic data upon which candidate species for culture and new techniques can be assessed. Research on consumer acceptance and market performance of products produced by aquaculture might also be considered where applicable.

B. Fish Conservation Measures

Information on the effects of overfishing, pollution and fish breeding on fish conservation could be exchanged.

C. Fish Hatcheries

D. Exploitation of Living Resources

6. HEALTH SCIENCES

A. Family Planning

1) National programs

2) Family planning centers

B. Food and Drug

1) Regulatory requirements

2) Research programs

3) Field operations

C. Medical Teaching Centers

1) Training of medical and health personnel

2) Research and clinical investigations

3) Specialist training in pharmacology, hypertension, endocrinology and neurology

D. **The Extraction of Chemicals, Drugs and Antibiotics from Marine Plants, Fish and Fish Residue.**

E. **Anti-Cancer Research;** immunological studies

7. MARINE SCIENCES AND TECHNOLOGY

Discussions on the following topics might be held to identify areas of interest for exchanges or joint development:

A. **Marine Chemistry;**

B. **Air-sea Interactions,** especially with regard to long range weather and climate predictions; impact of the slow movement of ocean-water on weather;

C. **Pollution,** especially in coastal waters;

D. **Arctic Studies;**

E. **Recreation and Marine Parks;**

F. **Marine Technology and Instrumentation;** observation and collection of data from the ocean and associated instruments;

G. **Submarine Geology;**

H. **Observation Data from Commercial Shipping,** especially for meteorology and oceanography;

I. **Exploitation of Offshore Hard Minerals and Petroleum;**

J. **Spatial Utilization of Offshore Areas;**

K. **Coldwater Operations;**

L. **Data Gathering;**

M. **Diving Technology (SEATOPIA);**

N. **Underwater Operations.**

8. PHYSICAL SCIENCE

Discussion on a number of the following topics with the Japanese have already been initiated but could effectively be continued.

A. **Metallogeny:** Dr. Sangster has been in touch with Japanese geologists regarding Kuroko-type volcanogenic-massive sulphide deposits.

B. **Blueschist Metamorphism:** The work of Dr. Seki on low grade blueschist metamorphism and transition to prehnitepumpellyite facies is of interest to Dr. Monger in Vancouver.

C. **Rock Magnetism:** Dr. Schwartz has been invited by Dr. Nagata to spend some time at his laboratory.

D. **Volcanology:** Dr. Souther spent a year at the University of Hokkaido with Dr. K. Yagi. It appears that Dr. Souther is exceedingly knowledgeable on matters of physical volcanology but can still gain much from Japanese geologists on chemical and petrographic aspects.

E. **Terrain Sciences:** Would be interested in furthering an exchange of information with the Japanese in the area of urban and environmental geology with particular reference to terrain hazard and terrain performance ratings. At this time the establishment of contacts for information exchange only is sought.

F. **Geophysics:** A visiting Japanese scientist (Dr. Ogawa of the Geological Survey of Japan) is working on magnetic interpretation methods. Otherwise there is a very limited capacity in our geophysics unit to provide facilities to visitors.

G. **Remote Sensing:** The measurement of electromagnetic radiation, within the frequency range from micro-waves through the visible range to ultra-violet, reflected, emitted or absorbed by the earth, from airborne and space vehicles and applied to resource management and environmental control.

9. SCIENCE POLICY

A. Technology Assessment

Technology assessment is the systematic identification, analysis, and evaluation of the real and potential impacts of technology on social, economic, environmental, and political systems and processes. It is concerned particularly with the second and third order impacts of technological developments; and with the unplanned or unintended consequences, whether beneficial or detrimental, which may result from the introduction of new technologies.

B. **Policy Relating to Marine Science and Technology**

Canada has a major interest in the development and effective utilization of adjacent waters and in the continuing environmental quality of these waters. Recently a task force study has been organized to develop a Canadian policy in marine science and technology. As Japan has similar interests and has a well-developed policy in this field, worthwhile discussions could be held to identify areas of mutual interest.

10. TRANSPORTATION

The following topics have been identified as being of potential joint interest:

A. **Railway Automated Car Identification Systems.** Developments are underway in Japan but the Canadian Mission reported in 1972 that Canada seemed to be ahead of the Japanese.

B. **Continuous Concrete Slab Systems** for attaching track are being developed in Japan and Canada, and the Canadian Mission in 1972 thought that further exchanges of information would be valuable;

C. **High Speed Train Development.** Both Japan and Canada are active in this field, and there may be Japanese interest in the turbo train experience;

D. **Snow-Fighting and Avalanche Warning Systems.** Research and development is underway in both countries;

E. **Port Systems Design and Development.** Sea and airport developments are underway in both countries, including the application of EDP in facilitating the international and intermodal movement of cargo;

F. **Dredging Design and Underwater Construction Mechanization.** Development is underway in both countries and the Canadian mission in 1972 reported interest in Canadian work by the Japanese;

G. **Joint Enroute and Terminal System (JETS)** of automated air traffic control;

H. **Locomotive Simulators,** developed by CN for the training of locomotive crews;

I. **Side-loading Systems** for 20-foot container handling (train);

J. **Electric Car Development;**

K. **Magnetic Levitation.**

11. URBAN AFFAIRS

A. **Intergovernmental Approach to Setting of Urban-Regional Development Policies**

How does Japan relate economic policy with urban policy?

B. **Urban Planning Techniques**

1) High density development in the urban core

2) Fringe area development

3) Urban futures—forecasting techniques

C. **Public-Private Sector Approaches to Coordinate Urban Development**

Programs—redevelopment and low cost housing

D. **Interface Between Transportation and Urban Affairs**

1) Transportation planning for urban regions, i.e. urban public transit, highways, etc.

2) Hardware, e.g. buses, trains, cars, infrastructures

E. **Urban Management Techniques**

Operational research in delivering services in urban areas

F. **Life Sciences**

Improve the quality of life in urban areas vis-à-vis the delivery of social services, e.g. education, recreation, housing services, etc.

G. **Computer Telecommunication Systems** including the wired city concepts and experiments.

12. WOOD SCIENCE AND TECHNOLOGY

The following list includes topics on which Canada has developed capabilities and which are considered to be of potential interest to the Japanese. Other topics of possible mutual interest are also included:

A. **Developments in Fire Retardancy and Preservation of Wood;**

B. **Use of Sawmill Chips and Other Residues for Pulping and Development of Chip Quality Indices;**

C. **Developments in the Use of Wood in Housing,** e.g., pre-fabricated construction;

D. **Packaging Research and Technology;**

E. **The Exchange of Information on the Properties of:**

1) The major Canadian commercial species of woods which may find a market in Japan; and

2) The major tropical species which are expected to be imported from Asia in increasing quantities either in the form of logs, lumber, plywood or veneer;

F. **Pulp and Paper Research and Development:**

1) H_2S pulping;

2) Pulp and Paper Research Institute of Canada research and development on "Papriformer", "Papridryer", new bleaching techniques, and pollution abatement research:

3) Research and development on by-products of pulp and paper production;

4) Exchange of experiences in the pulping of hardwoods, especially the less dense species;

5) Exchange of experiences with "synthetic" papers;

G. **Forestry Research in Canada:**

1) Discussion with Canadian Forestry Service and visits to Federal Forestry Research Centres;

2) Mechanized silvicultural research and development;

3) Mechanized harvesting research and development.

APPENDIX 3
VISIT PROGRAM

Wednesday, November 7

11:00 a.m.	Introductory meeting with representatives of participating organizations—Large Conference Room, East Block, Parliament Buildings.
12:30 p.m.	Lunch with Dr. A. Beaulnes, Secretary, Ministry of State for Science and Technology Le Cercle Universitaire.
2:15 p.m.	Discussions—Canadian science organization, role of MOSST, formulation of science policy, technology forecasting and technology assessment—MOSST Board Room, Ottawa.
5:30 p.m.	Courtesy call—M^{me} J. Sauvé, Minister of State for Science and Technology.

Thursday, November 8

9:30 a.m.....	Discussions of marine science, environmental protection and fisheries aquaculture.—Department of the Environment, Hull, P.Q.
2:00 p.m.	Discussions of industrial cooperation in S and T. Department of Industry, Trade and Commerce, Ottawa.
3:30 p.m.	Discussions of reciprocal relations in communications science—Department of Communications, Ottawa.

Friday, November 9

9:30 a.m. to ..... 3:00 p.m.	Visit to National Research Council, Montreal Road, Ottawa.
3:30 p.m.	Visit to Canada Centre for Remote Sensing, Ottawa.
7:00 p.m. to 9:00 p.m.	Reception, 7 Rideau Gate, Ottawa.

Monday, November 12

9:30 a.m. ..... Visit to Pickering Nuclear Power Station, Toronto, Ontario.

2:30 p.m. ..... Visit to Ontario Science Centre, Toronto, Ontario.

Tuesday, November 13

10:00 a.m. to ..... Visit to Canada Centre for Inland Waters,
3:00 p.m. ..... Burlington, Ontario.

Wednesday, November 14

9:30 a.m. ..... Visit to Transportation Development Agency, Montreal, P.Q.

2:30 p.m. ..... —Visit to C.N. Railways Research Centre, Montreal, P.Q.

Thursday, November 15

10:00 a.m. ..... —Interdepartmental review of discussions and visits, definition of areas of mutual interest, Canadian and Japanese proposals for future activities—MOSST Briefing Centre, Ottawa.

p.m. ..... Continuation of interdepartmental discussions.

Friday, November 16

10:00 a.m. ..... Visit to Marine Sciences Directorate, Pacific Region, Department of the Environment, Victoria, B.C.

Saturday, November 17

..... Vancouver—Depart for Japan.