1977
1978
ANNUAL REPORT

DEPARTMENT OF COMMUNICATIONS

Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

1977
1978
ANNUAL REPORT

DEPARTMENT OF COMMUNICATIONS

(submitted under the provisions of the
Department of Communications Act)

Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

Cat. No. Co 1-1978

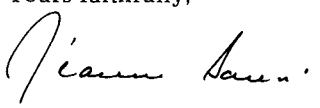
ISBN 0-662-50246-9

To His Excellency the
Governor General

Your Excellency,

I have the honour to present the Annual Report of the Department of Communications for the fiscal year ending March 1978.

Yours faithfully,



Jeanne Sauvé
Minister of Communications

1 INTRODUCTION

The Department of Communications was established in 1969 as a result of the government's awareness that communications policies, already affecting the lives of many Canadians, would become even more significant in their impact in the future. As individuals and as a nation, we tend to take for granted the vast communications systems that routinely provide entertainment, information and personal and business contact. Yet these systems have a profound and growing influence upon our national cultural identity.

New technologies are already precipitating sweeping changes in the way Canadians communicate with one another and with the world, and will have profound effects on our institutions, our culture and our personal lives. The department not only acts as a catalyst in the development of these new technologies but, at the same time, assesses their impact and develops policies for their orderly introduction.

These changes are creating, among other things, a new communications environment — an environment which is no longer being adequately served by current communications legislation. As a result, the federal government has introduced new legislation designed to respond to the new technological imperatives and regional concerns, and to ensure more effective regulation of telecommunications in Canada.

The increasing interest in the communications field by both federal and provincial levels of government in Canada is further testimony to its growing importance. Four federal-provincial conferences of communications ministers have now been held, as the two levels of government grapple with the emerging issues. The latest conference, at Charlottetown on March 29, 1978, provided reason for optimism that federal communications interests and provincial concerns need not be incompatible.

The communications industry itself is large and complex. There is a mixture of private and public ownership and a mixture of federal and provincial regulation. The industry employs approximately 100,000 Canadians. More than $18 billion has been invested in communications plant and equipment and this amount is growing at the rate of about $2 billion a year. The systems comprise satellites, earth stations, microwave networks, coaxial TV cables and telephone lines, along with radio and television stations and receivers. These systems are increasingly becoming interconnected to provide new and expanded services.

Canadians are heavy users of these systems: 96 per cent of Canadian homes have a telephone; 97 per cent have a television set; and 98 per cent have at least one radio.

Because the field of communications has grown so complex and diverse, the department finds itself engaged in a wide range of programs and activities across the nation. At its research centre west of Ottawa, scientists and engineers develop, perfect, and evaluate new technologies. In the Arctic, the department is engaged in helping provide a basic level of communications service. In metropolitan Canada, the problems and concerns are understandably different. Across the country, the department must ensure that the radio frequency spectrum — an essential if limited national resource — is put to its most effective use. And sociologists, economists and others continue to assess the impact and performance of Canada's communications systems and develop policies and programs to meet the growing challenge of change.

The government is the largest single user of telecommunications in Canada. In co-operation with other government departments, the department manages the large networks leased from the telecommunications companies to serve government needs, and develops standards and guidelines for the effective use of telecommunications by government.

And since we are but one nation in the global village, the department also promotes effective international communications systems and services and protects Canada's communications interests internationally.

The following pages indicate the programs and activities of the department during the fiscal year 1977/78.

2

NEW TELECOMMUNICATIONS LEGISLATION

New telecommunications legislation was reintroduced on January 26, 1978, designed to streamline the regulation of telecommunications in Canada, and to make it more responsive to changing technology and regional concerns.

The proposed Act would consolidate and clarify existing legislation, replacing four statutes and parts of two others by a single body of national telecommunications law. Among other things, the Act would more clearly define the functions and responsibilities of the CRTC and the federal government; provide a mechanism whereby provincial governments could contribute to the development of national telecommunications; and more clearly express national telecommunications policy.

The cornerstone of the new legislation is a set of 16 national objectives, the first of which declares: "efficient telecommunications systems are essential to the sovereignty and integrity of Canada, and telecommunications services and production resources should be developed and administered so as to safeguard, enrich and strengthen the cultural, political, social and economic fabric of Canada."

The Act would allow the Minister, with the consent of the governor-in-council, to enter into agreements with the provinces so as to delegate federal regulatory functions to provincial agencies. The Act would also empower the government to issue broad policy directions to the CRTC with respect to national telecommunications policy, but not with respect to the issue, amendment or renewal of broadcasting licences, the content of programming, the application of standards of quality or the restriction of freedom of expression.

3

FEDERAL-PROVINCIAL RELATIONS

The emerging importance of telecommunications is paralleled by the growing interest of both levels of government in communications issues.

A federal-provincial conference of communications ministers was held in Charlottetown March 29, 1978, to discuss such major issues as new communications legislation, pay television, the delegation of authority over cable TV, competition and mechanisms for future consultation.

As was noted in a joint news release, provincial ministers generally supported Bill C-24, introduced in the House of Commons on January 26, 1978, and expressed the hope that the legislation would be adopted as soon as possible. On the question of pay television, there were differences as to the need for introducing this new service at this time, and there was no consensus as to jurisdiction over pay television. Certain provincial ministers stated that they would be developing and implementing pay television policies and it was noted that the federal government would proceed to develop, in conjunction with provinces who wish to do so, a model for the introduction of a national pay television system in Canada.

On the subject of cable delegation, discussion focused on the range of options and minimum requirements that could form the basis of any potential agreements. Discussions are proceeding on a bilateral basis between the federal government and various provinces on possible delegation options, including provincial licensing and regulation of cable systems.

The ministers also agreed to the establishment of a working group to develop policy principles or criteria which would ensure that telecommunications services in Canada are provided in a manner consistent with the public interest.

During the year, talks continued with the Province of Ontario concerning arrangements for sharing authority over cable TV systems. These arrangements seek to meet provincial objectives while safeguarding the federal responsibility to maintain the integrity of the Canadian broadcasting system. Similar discussions began with Quebec.

In two rulings handed down on November 30, 1977, the Supreme Court of Canada determined that Parliament has exclusive jurisdiction to a considerable extent in matters concerning cable television. These rulings served to clarify jurisdiction with respect to cable television.

4

MANAGING THE RADIO FREQUENCY SPECTRUM

Part of the revolution in communications can be seen through the explosive growth in the use of radio. A year ago, 893,781 radio transmitters were licensed in Canada. By March 1978, the figure had risen to 1,254,822, a 40 per cent increase. Traditionally, radio has served as a communications workhorse for industry, police forces, fire departments, taxicabs, the transportation sector and similar groups. But the phenomenon of CB radio, known in Canada as General Radio Service (GRS), popularized the use of two-way radio. By March 1978, 816,576 GRS licences were in force, accounting for 65 per cent of the total number of transmitters.

The growth of low-cost personal radiocommunication has been a boon to many Canadians, but it has not been without problems. With Canadians everywhere taking to the airwaves, the airwaves themselves are becoming more crowded, especially in urban Canada. With hundreds of thousands of new transmitters and new operators, the incidence of interference with reception of other communications services, such as AM or FM radio or TV, has also increased.

The Department of Communications manages the radio frequency spectrum in Canada. It does so by allocating frequencies for different communications services, regulating the use of radio, developing standards and specifications for all users of the resource, and promoting more effective use of the spectrum.

Much of this work is carried out by the department's district offices and monitoring stations in five regions across Canada: Atlantic, Quebec, Ontario, Central and Pacific. Each regional office manages the radio frequency spectrum in its area by licensing radio stations, inspecting radio facilities to ensure conformity with regulations, investigating sources of interference, monitoring radio transmissions and holding examinations to certify operators of specific radio services.

During the fiscal year, the department met the challenge brought about by the growth of GRS in a number of ways. Through a series of regional GRS symposia, a dialogue with GRS users across Canada was established whereby the department was able to listen to complaints and co-operate in finding solutions to some of the major problems. An information program designed to increase awareness of the regulations governing the use of radio and to promote responsibility on the airwaves proved effective. Tougher regulations were brought in to curb the use of linear amplifiers — a major source of interference. Enforcement actions and prosecutions against flagrant offenders of the radio regulations increased. And, within the department, plans were being developed to rationalize the GRS licensing process, using a computer-based system.

GRS is not the only growth area, however. There is also a serious and growing demand for commercial land mobile radio services, such as those used for transportation, shipping, police and fire. Such is the demand that existing spectrum allocations for this service could become saturated in major urban centres by the 1980s.

To resolve the problem, the department is reviewing spectrum allocations particularly in the 406 to 960 MHz band, now used for a variety of services, such as UHF TV broadcasting, land mobile, amateur radio and others. A paper issued during the fiscal year concludes that, while there is an immediate problem with respect to short-term requirements of land mobile service in urban areas, technological and social changes can be expected to alter future patterns of use; therefore the long-term requirements are less certain. The department is developing a policy on the future use of this band which may involve some reallocation of frequencies.

In other spectrum management activities during the year, the department:

- introduced a new class of certificate in the Amateur Experimental Service, designed to accommodate those who are interested in the rapidly growing computer communications hobby. Canada is the first country to do so.
- received and evaluated 898 applications for approval of radio equipment, bringing the total of approved radio apparatuses in Canada to 16,996. All radio transmitting apparatuses in Canada must be approved, since the operation of equipment which has not met government technical standards could contribute to interference or the inefficient use of the spectrum.
- began planning for an automated spectrum management system which, with the help of computers, would greatly improve the efficiency of spectrum management in Canada. Plans envisage a pilot project before the implementation of any full-scale system.

Several changes to the Radio Regulations were announced during the fiscal year. Among them:

- new Radio Operator Certificate Regulations were issued to accommodate advances in technology and new international requirements.
- landed immigrants were given equal status with Canadian citizens to hold radio licences and operator certificates.
- regulations were issued to exempt paging receivers from licensing, provided they meet minimum requirements of a new Radio Standard Specification, issued on March 15, 1977.
- amendments were made to the Radio Interference Regulations to control the proliferation of illegal radio devices.

The department also carries out technical evaluation of all broadcasting and cable TV licence applications and advises the Canadian Radio-television and Telecommunications Commission (CRTC) whether a Technical Construction and Operating Certificate will be issued.

During the year, the department processed 615 Canadian applications for cable television licences and 343 for AM, FM and TV broadcasting. Also processed were 1,799 broadcast proposals from foreign countries, especially the United States. The department evaluated and co-ordinated 220 FM and 160 TV channels for the CBC Accelerated Coverage Plan.

5

MANAGING GOVERNMENT TELECOMMUNICATIONS

The federal government is the largest user of telecommunications in Canada and the department is responsible for the overall co-ordination and planning of telecommunications to serve all departments. The Government Telecommunications Agency (GTA) was established to undertake this role on a national basis with staff located in Ottawa and key regional offices.

The agency plans, establishes and manages telecommunications facilities and services for federal departments and agencies to realize the most appropriate quality of service at the lowest cost to the government. The agency manages consolidated telephone systems in 20 cities in Canada and two in the United States, together with the extensive intercity networks leased from common carriers that serve federal government needs throughout Canada and to points in the United States. In addition, the agency staff provides a telecommunications consulting service to all departments and draws on skills from the private sector as required for this purpose.

Escalating costs and increased reliance on telecommunications by government clients have led GTA to seek out ever more efficient systems while revitalizing existing ones in order to keep overall costs to the government consistent with the value of service being provided. As a result, intercity systems now include voice and data networks for shared use by all federal departments and agencies. Plans are now underway to provide effective teleconference and document transmission (facsimile) systems, the cost of which can be more than offset by savings realized by reductions in travel, courier services, mail and other administrative support systems.

6

SOCIAL ISSUES IN TELECOMMUNICATIONS

The telecommunications environment is such that a change in one area of technology, regulation, service or use ripples through other telecommunications sectors, and can have widespread social or cultural impact as well.

As part of the process of developing sound policies to meet today's and tomorrow's challenges, the department undertakes continuing analysis and examination of the social aspects and impact of key areas of communications. In addition, the department conducts various studies as a basis for new policies and legislation required to further the objective of creating and maintaining a national broadcasting system.

For example, during the year, the department examined such issues as:

- the introduction of pay television to Canada;
- the possible distribution of televised proceedings of the House of Commons;
- the emergence of new forms of local broadcasting;
- the effects of the CRTC's policy on FM broadcasting on the private radio broadcasting sector;
- the effects of television on children;
- reaction to those amendments to the Income Tax Act which relate to broadcasting;
- the principle of separating institutional control over transmission facilities from the content being transmitted;
- the provision of special telecommunications services for the physically handicapped. The department has participated in the development of a Visual Ear, a portable device attached to a telephone to enable deaf and speech-impaired people to communicate; radio reading services for the blind via FM subcarrier transmissions; and Bliss symbolics, a visual symbol system for the non-speaking physically handicapped. The department is preparing an overall policy on communications and the handicapped.

In general terms, the department seeks to rationalize the structure of public and private broadcasting in Canada so that the system meets national objectives — an effort that includes liaison and consultation with the provinces.

A joint broadcast coverage survey was undertaken by the department and the Province of Newfoundland during the fiscal year, involving an evaluation of

radio and television reception in the province. Teams of researchers travelled to 349 communities, conducting interviews and field-strength measurements. The primary objective of this study was to determine the status of broadcast coverage in rural and semi-rural communities. As an aid to TV viewers in outlying areas, the department published an information pamphlet entitled, *For better television reception.*

7

TELECOMMUNICATIONS SYSTEMS AND SERVICES

The department must ensure that the future communications environment, foreshadowed by an enormous range of new devices and techniques, is developed with due regard for the impact upon social and cultural values and upon the quality of life in Canada, as well as upon the Canadian economy. At the same time, the department must ensure that Canadian communications systems provide an acceptable level of service at a reasonable cost — locally, regionally and nationally.

Although the tariffs of federal regulated carriers are regulated by the CRTC, the department develops policies and programs related to communications carriers and the telecommunications industry as part of its general mandate. For example, the department studies such aspects as corporate and financial structure, intercorporate relationships and economic activity of the industry, and recommends policies that will foster improved service and the development of key sectors of the telecommunications industry and its suppliers.

Earth station ownership study
On December 12, 1977, the Minister announced that DOC would begin a review of the practice whereby Telesat Canada owns all the earth stations in its satellite system. This re-examination began during the fiscal year to identify cases where non-Telesat ownership of earth stations could encourage fuller access to new satellite services. A report is expected to be issued during the next fiscal year.

The study was called for by the Minister after a decision by the governor-in-council to vary a ruling by the CRTC which disallowed membership of Telesat in the TransCanada Telephone System. The governor-in-council decided to allow this membership due to broad issues of public policy which lay beyond the purview of the CRTC. Among these considerations was the necessity of better integrating the satellite and terrestrial systems in Canada to provide greater utilization, and thus lower the costs of satellite service.

Northern communications
On January 22, 1977, the department made a commitment that every community in the Northwest Territories would enjoy basic local and long-distance telephone service within five years and backed up the commitment with a Northern Communications Assistance Program. Under the program, the federal government will contribute about $9 million to cover the capital costs of facilities to bring reliable long-distance telephone service to all communities within the N.W.T.

The Northern Communications Assistance Program became operative during the 1977/78 fiscal year after extensive negotiations with the industry, resulting in a first series of contracts with Bell Canada and Canadian National Telecommunications.

Public message telegraph
A study on the status of public message telegraph service in Canada, released by the department August 17, 1977, found that a steady decline in this service will probably continue, but that the service remains valuable to Canadians and, to some, constitutes too important a service to discontinue. While the report made no recommendations, it noted that 92 per cent of the customers surveyed said other forms of communication might not adequately satisfy their needs. Eight per cent said they had no alternative to the service.

Newfoundland study
During the year, a study of the quality of telephone service in Newfoundland found that service appeared to be marginally better in territory served by the Newfoundland Telephone Company than it was in areas served by Canadian National Telecommunications.

The study assessed the quality of telephone service by conducting an opinion poll of 1,234 households in 319 communities and a survey of performance criteria. Visits were made to more than 50 communities throughout the province by members of a study team.

It is expected that the study will be used in the consideration of performance standards and in the continuing efforts of the telephone companies to maintain progress in improving service.

Computer communications
A revolution in communications is occurring as a result of the marriage of computers and telecommunications systems. Canada has moved rapidly toward the electronic storage of information and away from the traditional method of storing data on paper.

The growing expenditure on computers and related services is a measure of the speed with which this shift is occurring. The cost of computer-based services to users in Canada (including computer equipment, supplies, personnel and data communications services) is estimated to have reached $3.6 billion in 1977, up $2.4 billion from 1970. The department is continuing to study the implications of a transition from paper-based to computer-stored information.

An interdepartmental committee established in 1973 to study computer communications completed its work during the fiscal year under review. Throughout the work of this committee, discussions were held with the provinces, representatives of Canadian industry and potential users of computer communications. The committee emphasized the need for continuing consultation on those aspects of computer communications which affect more than one federal department.

Telecommunications studies

Various studies are undertaken by the department to help it achieve its objectives.

During the year, for example, statistics on cable and broadcasting systems were compiled and organized into comprehensive databanks. Tabulations produced from these databases were used in a variety of studies of the industries involved.

A pilot study to forecast the demand for non-voice telecommunications services over the next decade was completed. Another pilot study underway during the year concerned the demand by rural, domestic and business sectors of the economy for communications services over the next 10 years.

A program of short-term analysis and forecasting of Bell Canada was initiated and an operational model for medium-term analysis of federally regulated common carriers was implemented.

Studies were conducted into the issues of cost allocation and cross subsidies in the provision of telecommunications services, and research on designing the general framework for evaluating capital expenditures by the telecommunications industry was undertaken.

Canada, through the department, has also made a significant contribution to an OECD (Organization for Economic Co-operation and Development) study of the economic analysis of information activities.

8 RESEARCH

At a time when change is the only constant, research and development are the keys to future technological growth. The department conducts an extensive and continuing research program for three main reasons. First, advances in technology are the primary means of improving and expanding the telecommunications network and its services. Second, research serves as a base for the policy planning and program functions of the department. Third, through transfer of technology, innovations developed through government research can benefit Canadian industry and create Canadian jobs in high-technology fields.

Most of the department's in-house research is carried out at the Communications Research Centre (CRC), located near Ottawa. Generally, the work undertaken complements and is often done in co-operation with private industry.

The department also fosters advanced communications research capabilities at Canadian universities through contracts totaling about $700,000 a year. In addition, a certain proportion of the department's research is undertaken for the Department of National Defence.

A large part of the research effort has been and continues to be directed to communications spacecraft research. However, in recent years, more emphasis has been placed on public telecommunications, such as telephone, telegraph, broadcasting, cable distribution, data networks and mobile communications.

The 1977/78 research program

DOC's internal research effort is directed along six main lines: transmission and delivery systems; optical communications; space; rural and remote communications; northern communications; and new home services. Highlights of the 70 distinct research projects underway during 1977/78 were these:

- Fibre optics are a promising new transmission system, which will have vastly increased information carrying capabilities. DOC research in fibre optics is aimed at improving this new technology and promoting Canadian involvement in this burgeoning field. DOC researchers were the first to discover an important photosensitivity phenomenon in certain types of optical fibre waveguides which may be useful in fabricating waveguide filters and controlling laser source wavelength. Also developed was an optical fibre coupler useful for joining signals derived from several sources for point-to-point transmission through a single fibre waveguide. Such a device would reduce the amount of fibre needed to meet telecommunications traffic demands. The access coupler technology allowed the first demonstration of a fully bidirectional fibre-optic link — a significant advance in lowering network implementation costs.

- The department is sponsoring a five-year trial of fibre optics for the delivery of television, FM broadcasting, single-party telephone and data signals in and around the rural town of Elie, Manitoba. This trial will evaluate the technology under real market and

operating conditions, assess the implications of integrating telephone and broadcasting services, and provide opportunities for Canadian industry. CRC is designing and building a 3.6 km single-fibre subscriber loop for integrated delivery.

■ Through a system called videotex, Canadians may soon be able to use their home TV sets to access remotely located databanks. Using telephone lines, coaxial cables or television channels, equipment under development will permit individuals with a modified TV set and a calculator-like keypad to call up a wide range of information, including entertainment, news, weather reports, educational or reference material and other data. Although similar to interactive TV systems developed elsewhere, particularly in Europe, the Canadian videotex system represents improved second-generation technology, is more flexible; and can generate higher quality graphics than existing systems. During the fiscal year under review, equipment was being developed for laboratory demonstrations of the system and studies concentrated on when and how urban networks might be developed to provide such a service.

■ During 1977/78, work continued on the development of a mobile radio data system for use by police forces. Such a system would put policemen in patrol cars in touch with a computer which would provide instantaneous information on stolen cars and descriptions of suspects through a video terminal below the dashboard. In January 1977, a project was launched to develop such a system for the Vancouver police department. The design for the system was completed and a mock-up of the terminal was prepared.

■ A unique project designed to provide hunters and trappers in the far North with reliable two-way communications has undergone trials. Inuit hunters in northern Quebec used this trail radio system throughout the fall and winter to provide communications between a base camp and hunting parties away on snowmobiles. The test program was extremely successful and in one case resulted in locating a lost hunting party, probably saving several lives.

■ The university research program was reoriented during the fiscal year to include industry and provincial government participation. Forty-three projects were approved — 12 in the field of space communications; 11 in conventional communications; 16 in the socio-economic aspects of communications; and four in radio wave propagation.

■ A working group was set up to study new home and business communications services. This group has defined the general issues involved, the options available to policy makers and the experimental approaches which might be most productive. Exploratory steps were taken to develop government-industry research in the areas of electronic mail and records automation.

9 SPACE PROGRAMS

Satellites are now a vital part of our national broadcasting and telecommunications systems, providing voice, data, color TV and radio signals across the length and breadth of the country. They offer a reliable and economic means of communicating over Canada's vast terrain and through its sometimes inhospitable climate. Satellites reach easily into rural and isolated northern areas more efficiently than any other method.

Canada's interest in space predates the formation of the Department of Communications in 1969. Between September 29, 1962, and March 31, 1971, Canada launched four highly successful satellites (Alouette I and II and ISIS I and II) to study the ionosphere; two continue to operate routinely in orbit. Then, with the launch of Telesat Canada's Anik I on November 9, 1972, Canada became the first nation in the world to put a domestic geostationary communications satellite into orbit. Anik II, a backup, followed shortly after and Anik III was placed in service during 1975.

The department continues to study and develop programs for a number of applications for satellite communications, including air traffic control, search and rescue, government communications, broadcasting and others.

Hermes — satellite of the future

The second anniversary of the successful operation of the most powerful communications satellite ever sent into space was celebrated on January 17, 1978. Under a joint Canada-U.S. program, Canada designed and built the Hermes spacecraft while the United States provided some components and carried out the launch.

In Canada, a total of 21 of 34 originally planned experiments on Hermes had been completed by the end of the fiscal year. These experiments were in such diverse fields as teleconferencing, community interaction, broadcasting, telemedicine, tele-education, government operations, computer communications and spacecraft technology. The lessons learned may influence the future development of many new communications services in Canada.

Hermes exceeded its design lifetime of two years, but since it continued to operate well, plans for a third year of experimental operations, through to the end of 1978, were implemented.

Already, the technology developed for the Hermes satellite is being exploited in Canada and the U.S. in new series of satellites under construction in both countries. The new satellites will operate in the 12/14 GHz frequency band.

The major technological objectives of the Hermes project were related to three advanced technology subsystems: a lightweight, flexible power array which tracks the sun and provides operating power; a three-axis stabilization system; and a 200-watt travelling wave tube amplifier. All of these subsystems performed well.

Anik B
The department continued planning during the year for a program of experiments in communications using a new dual-band satellite, Anik B, to be launched in late 1978. Operated by Telesat Canada, the new satellite will carry four channels in the 12/14 GHz range for experimental use, along with a 4/6 GHz capability for conventional satellite communications. The department is developing a program of experiments in satellite communications, using the four higher frequency transponders.

Musat
Planning for Musat, a proposed multipurpose ultra high frequency satellite system, has been going on for the past several years in Canada. A satellite of this type would supply high-quality 24-hour-a-day service to such users as the Department of National Defence, the Coast Guard, and Fisheries and Environment Canada, to fulfill a variety of communications and monitoring needs. Various systems studies were being completed as the fiscal year ended.

Sarsat
Satellites may soon be locating downed aircraft quickly and effectively. Sarsat is a proposed search and rescue satellite which could accurately pinpoint the location of a crashed aircraft. A joint Canada/U.S./France project, Sarsat would provide rapid and accurate positioning derived from signals emitted by an emergency transmitter aboard the aircraft. Work continued during the year on systems definition, development of a signal processor and consideration of a scanning receiver which could process signals from more than one source at the same time. Negotiations leading toward a Memorandum of Understanding with France and the United States continued in 1978.

European Space Agency programs
The department is now negotiating possible Canadian participation in a variety of European Space Agency programs, including plans for a maritime satellite program (Marecs), a direct broadcast program (Heavy Communications Platform, or H-Sat for short), an advanced systems and technology program and an aeronautical satellite program. During 1977, a detailed proposal for Canadian industry to build a complete transponder and antennas for the H-Sat project was developed. Participation in European Space Agency programs could have benefits in terms of contracts for Canadian space and related industries.

10

INTERNATIONAL COMMUNICATIONS

The provision of effective world-wide telecommunications systems and services requires a high degree of continuing co-operation among members of the world community.

Nations wishing to establish new services must take into account international technical standards and procedures. Systems designed to interconnect with others must measure up to international performance standards. Co-operation is particularly important in the operation of international landline circuits, microwave systems, submarine cables and satellite telecommunications systems.

The Department of Communications safeguards Canadian interests in the international arena; it ensures that Canada's obligations under international agreements are fulfilled. Canada is a member of and participates in international conferences on regulation and co-ordination of the frequency spectrum and helps to establish international standards for equipment and facilities. Decisions in these areas affect the international salability of Canadian telecommunications equipment.

Canada is an active member in the International Telecommunication Union (ITU), the United Nations' specialized agency concerned with telecommunications, and some 20 technical organizations, such as the International Telegraph and Telephone Consultative Committee (CCITT) and the International Radio Consultative Committee (CCIR) of the ITU.

ITU Secretary-General Mohamed Mili visited Ottawa during the year and met with the Minister and senior officials of the department. Canada, one of the members elected to the ITU Administrative Council by the Plenipotentiary Conference, participated in the 32nd session of the council in May and June 1977.

Preparing for and attending international meetings and conferences involves considerable effort every year. Canadian positions at these meetings must be carefully worked out to ensure both that Canadian interests are safeguarded and that international considerations are taken into account in working out national positions.

An ITU World Administrative Radio Conference (WARC) for Aeronautical Mobile was held in January and February 1978 in Geneva and Canada's major objectives were met.

During the year, Canada attended all 11 study group meetings of the CCIR in preparation for the major XIV Plenary Assembly of the committee in Kyoto, Japan, in 1978. Fourteen submissions were made to these study group meetings and two joint meetings of the CCIR and the CCITT.

Representatives of the department also attended sessions of the NATO committees dealing with civil communications requirements.

Since radio waves are no respecters of national boundaries, an important aspect of the department's work is Canada/U.S co-ordination of the radio spectrum in border areas. During 1977/78, interim working arrangements were concluded with the United States covering the co-ordination of land mobile systems operating in the 806 to 890 MHz band in border areas.

Within the framework of the Canada/France program of co-operation in telecommunications, which was approved in February 1977 by the Canadian and French ministers responsible for the sector, a group of Canadian telecommunications industry representatives visited Paris early in May to identify opportunities for industrial co-operation. At a meeting in Paris in June, the two ministers reviewed the progress made under the program and agreed on future activities, including a visit to Canada by French telecommunications industry representatives.

Canada participated as an observer in the activities of the Inter-American Telecommunications Conference (CITEL), a specialized organ of the Organization of American States which supports the activities of the ITU. At a meeting of CITEL's Permanent Executive Committee, Canada was instrumental in the committee's decision to hold a symposium in July 1978 to assist CITEL member countries in their preparations for the crucial 1979 general World Administrative Radio Conference.

In June the department was host to an international workshop on Special Aspects of Telecommunications Development in Isolated and/or Underprivileged Areas of Countries. Participation included officials from a number of developing nations, the Canadian telecommunication industry, the ITU, and the major international financial lending agencies. The workshop was in support of studies undertaken by a Groupe Autonome Specialisé (GAS/5) of the CCITT. These studies are directed towards the special problems encountered by developing nations in providing telecommunications as a part of their overall economic development.

During the year there were visits to Canada by telecommunications officials from many countries, including Japan, Australia, France, Israel and the People's Republic of China.

APPENDICES

Appendix I

Regional and district offices of the Department of Communications

Atlantic
Regional Office
1222 Main Street
P.O. Box 1290
Moncton, N.B.
E1C 8P9

Quebec
Regional Office
2085 Union Street
20th floor
Montreal, QUE.
H3A 2C3

Ontario
Regional Office
55 St. Clair Avenue East
9th floor
Toronto, ONT.
M4T 1M2

Central
Regional Office
2300 - One Lombard Place
Winnipeg, MAN.
R3B 2Z8

Pacific
Regional Office
325 Granville Street
Room 300
Vancouver, B.C.
V6C 1S5

District Offices
Newfoundland
CORNER BROOK, NFLD.
Federal Building
Main Street
P.O. Box 811
A2H 6G1

ST. JOHN'S, NFLD.
Sir Humphrey Gilbert Building
P.O. Box 5277
A1C 5W1

Prince Edward Island
CHARLOTTETOWN, P.E.I.
180 Kent Street
C1A 1N9

Nova Scotia
HALIFAX, N.S.
6009 Quinpool Road
B3K 5J7

SYDNEY, N.S.
500 King's Road
B1S 1B4

New Brunswick
BATHURST, N.B.
159 Main Street
P.O. Box 155
E2A 3Z2

MONCTON, N.B.
77 Vaughan Harvey Blvd.
E1E 2B4

SAINT JOHN, N.B.
189 Prince William Street
P.O. Box 7285, Station A
E2L 4S6

District Offices
Quebec
CHICOUTIMI, QUE.
942 Chabanel Street
G7H 5W2

MONTREAL, QUE.
2085 Union Street
H3A 2C3

NORANDA, QUE.
32 Frédéric Hébert Avenue
J9X 1V2

QUEBEC, QUE.
2 Place Québec
G1R 2B5

RIMOUSKI, QUE.
140 St-Germain Street West
G5L 4B5

SEPT-ILES, QUE.
701 Boul. Laure
G4R 1X8

SHERBROOKE, QUE.
1650 King Street West
J1J 2C3

TROIS-RIVIERES, QUE.
Edifice Public
P.O. Box 67
G9A 5E3

District Offices
Ontario
HAMILTON, ONT.
135 James Street South
L8P 2Z6

KENORA, ONT.
100 Fourth Street South
Federal Building
P9N 3X9

KINGSTON, ONT.
Federal Building
P.O. Box 633
K7L 4X1

KITCHENER, ONT.
30 Duke Street West
N2H 3W5

LONDON, ONT.
451 Talbot Street
N6A 5C9

NORTH BAY, ONT.
222 McIntyre Street West
P.O. Box 596
P1B 8J5

OTTAWA, ONT.
473 Albert Street
K1R 5B4

SAULT STE. MARIE, ONT.
421 Bay Street
P.O. Box 727
P6A 5N5

THUNDER BAY, ONT.
33 Court Street South
P7B 2W6

TORONTO, ONT.
55 St. Clair Avenue East
M4T 1M2

WINDSOR, ONT.
880 Ouellette Street
N9A 1C7

District Offices
Manitoba
THOMPSON, MAN.
436 Thompson Drive
R8N 0C6

WINNIPEG, MAN.
2300 - One Lombard Place
R3B 2Z8

Saskatchewan
REGINA, SASK.
2101 Scarth Street
S4P 2H9

SASKATOON, SASK.
206 Circle Drive East
S7K 0T5

Alberta
CALGARY, ALTA.
205 - 8th Avenue S.E.
T2G 0K9

EDMONTON, ALTA.
10025 - 106 Street
T5J 1G6

GRANDE PRAIRIE, ALTA.
Federal Building
11117 - 100 Street
T8V 2N2

Northwest Territories
FORT SMITH, N.W.T.
P.O. Box 540
X0E 0P0

YELLOWKNIFE, N.W.T.
Bellanca Building
P.O. Box 2700
X0E 1H0

District Offices
British Columbia
CRANBROOK, B.C.
11 - 14th Avenue South
V1C 2W9

KELOWNA, B.C.
471 Queensway
V1Y 6S5

LANGLEY, B.C.
3884 - 192 Street
P.O. Box 3396
V3A 4R7

PRINCE GEORGE, B.C.
707 - 299 Victoria Street
V2L 5B3

PRINCE RUPERT, B.C.
Federal Building
V8J 1G8

VANCOUVER, B.C.
325 Granville Street
Room 300
V6C 1S5

VICTORIA, B.C.
816 Government Street
V8W 1W9

Yukon
WHITEHORSE, Y.T.
201 - 4133, 4th Avenue
Y1A 1H8

Appendix II

Canadian telecommunications industry — 1977

	Telephone and other carriers*	Radio and television broadcasting**	Cable television***	Total
		— in millions of dollars —		
Total operating revenues	4,156.0	671.2	229.6	5,056.8
Net fixed assets — land, property and equipment	11,305.3	479.6	273.3	12,058.2
Total assets	12,774.0	943.7	431.8	14,149.5
Value of wages and salaries paid	1,561.7	481.0	64.6	2,107.3
		— number —		
Number of employees	103,131	25,651	4,838	133,620

*Includes CNCP Telecommunications, Telesat Canada and Teleglobe.
**Includes private stations and CBC.
***Includes only licensees reporting more than 1,000 subscribers.

Source: Statistics Canada and Department of Communications

Appendix III

Trends in the telephone industry 1947-1977

	1947	1957	1967	1977
Telephone companies	3,056	2,637	2,281	333*
Telephones, all types (millions)	2.2	4.8	8.4	14.5
Full-time employees	35,578	64,074	68,431	87,546
Local and long-distance calls (millions)	3.800	8.300	13.400	23.200
Calls per capita	305	498	650	991

*Eighteen of these companies provide 99% of the services.

Source: Department of Communications

Appendix IV

Canadian households with communications services — May 1978

	Number of households	Percent of total households	Increase (Decrease) over 1977	
			Number	Percentage
Television*	7,121,000	97.3	299,000	4.4
Color	5,294,000	72.3	530,000	11.1
Black & white	3,819,000	52.2	(133,000)	(3.4)
Radio (AM & FM)**	7,206,000	98.4	324,000	8.3
Telephone***	7,063,000	96.5	292,000	4.3
Cable television	3,625,000	49.5	337,000	10.2
Total Canadian households	7,320,000	100.0	298,000	4.2

*Because some households have more than one television receiver, combining households with color television and those with black and white television does not equal total households with television receivers.

**Includes households with one receiver or more.

***Includes households with one telephone or more.

Source: Statistics Canada

Appendix V

Cable television in Canada by region — 1977*

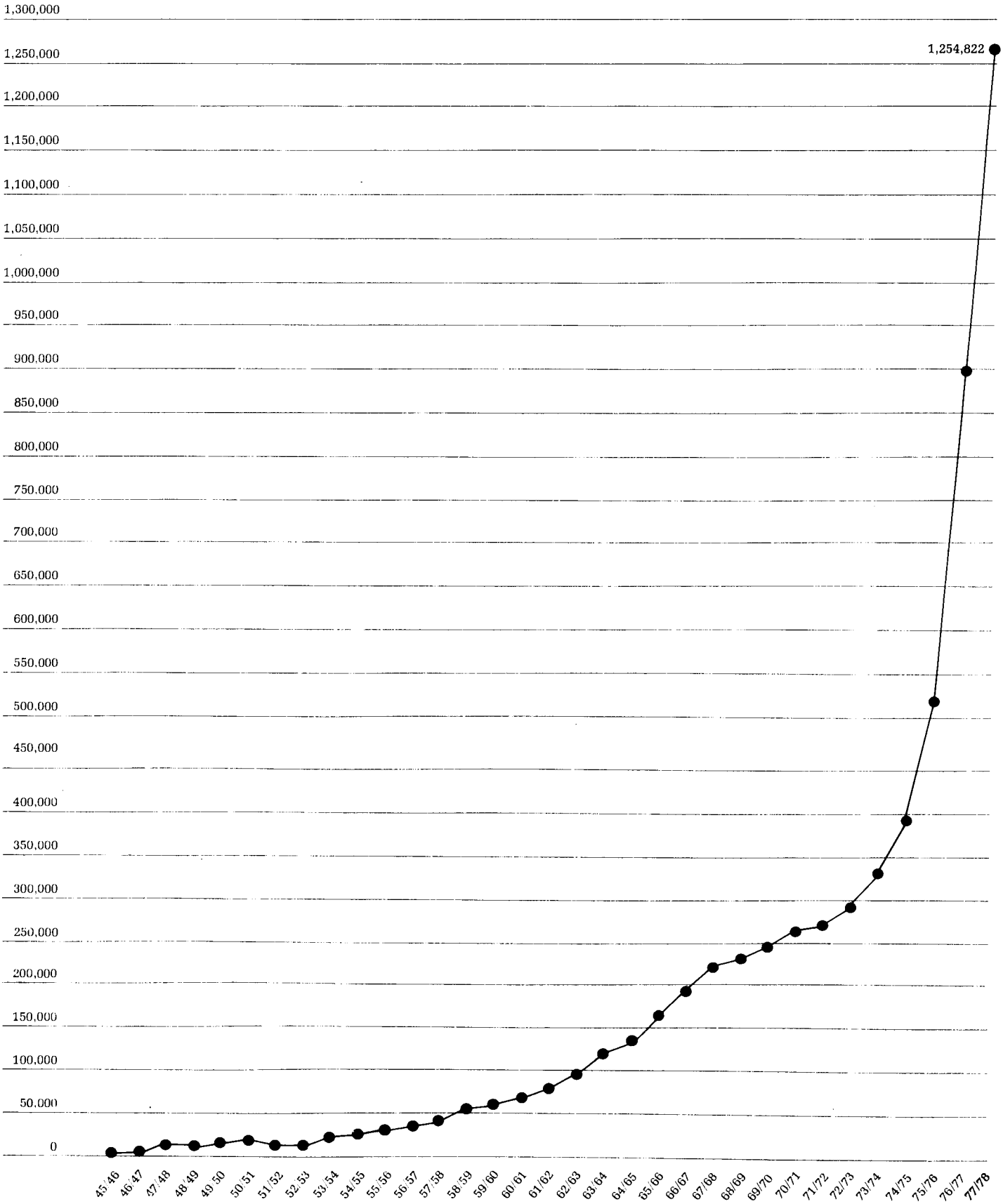
	Pacific**	Prairies	Ontario	Quebec	Atlantic	Canada
Systems	68	31	116	139	33	387
Subscribers	652,378	427,025	1,538,023	689,353	137,916	3,444,695
Households in licensed areas***	780,928	693,544	2,187,205	1,519,988	239,849	5,421,514
Penetration (%) in licensed areas	83.5	61.6	70.3	45.4	57.5	63.5

*Figures are for the period September 1, 1976 to August 31, 1977. Data includes non-profit organizations.
**Includes British Columbia, the Yukon and Northwest Territories.
***"Licensed areas" means areas which have been licensed for the distribution of cable television.

Source: Department of Communications

Appendix VI

Radio station licences
in force 1945 - 1978
(all classes)



Source: Department of Communications

Summary of radio station licences by category — 1978

Ship	16,062	
Coast	104	
Land	72,162	
Mobile	284,933	
Earth	156	
Space	6	
General Radio Service*	810,576	(369,477)
Sub-total	1,183,999	
Certificates of registration issued to United States licensees	70,823	
Total licences in force	1,254,822	
Net increase in licences over preceding year	361,041	(40.3%)

*General Radio Service licences are valid for a three-year period. Figures in brackets indicate licences actually issued (new and renewed) during 1977/78 fiscal year.

Source: Department of Communications

Appendix VIII

Number of radio stations
by service category — 1978*

Service Category	Ship	Coast	Land	Mobile
Limited maritime mobile				
Private maritime mobile		104		
Public commercial			2,056	15
Restricted public commercial			923	
Private commercial			36,827	232,524
Federal government			6,629	24,825
Provincial government			7,165	35,323
Municipal			3,623	35,690
Experimental			558	624
Amateur experimental			18,262	
Public commercial receiving			144	2
Private commercial receiving			719	183
Public commercial automatic repeater			1,199	
Private commercial automatic repeater			2,786	
Aircraft navigational				14
Aeronautical mobile			1,643	15,040
Ship stations	16,062			

*A licence may show more than one service category.

Source: Department of Communications

Appendix IX

Department of Communications
1977/78 Expenditures by Activities (thousands of dollars)

	Operating	Capital	Grants and Contributions	Total
	Expenditures	Expenditures	Expenditures	Expenditures
Departmental administration	9,277	119		9,396
Telecommunications research	9,716	1,639		11,355
National telecommunications development	3,671		1,318	4.989
International participation	680		1,285	1,965
Management of the radio frequency spectrum	22,327	1,497	15	23,839
Space applications	18,970	3,481		22,451
Contributions to employee benefit plant	4,399			4,399
	69,040	6,736	2,618	78,394
Less: receipts and revenues credited to the vote	4,003			4,003
	65,037	6,736	2,618	74,391
Less: receipts credited to revenue	11,731			11,731
Add: services provided by other departments	3,775			3,775
accommodation provided by this department	2,389			2,389
Total cost of program	59,470	6,736	2,618	68,824

Source: Public Accounts of Canada 1977-78