ANNUAL REPORT
1980-1981

DEPARTMENT OF COMMUNICATIONS

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Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

DEPARTMENT OF COMMUNICATIONS

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To:

His Excellency the Right
Honourable Edward Schreyer,
P.C., C.C., C.M.M., C.D.,
Governor General and
Commander-in-Chief of Canada

Sir:

I have the honor to present the
Annual Report of the Department
of Communications for the fiscal
year ending March 1981.

I remain, Sir,
Your Excellency's obedient servant,

Francis Fox,
Minister of Communications

INTRODUCTION

A broader mandate

The mandate of the Department of Communications was extended in July 1980, when the Prime Minister announced the transfer of the Canadian government's arts and culture program from the Department of the Secretary of State. This change should help to ensure that communications policy is conducted with the highest concern for the cultural content and the cultural implications of communications technology. It should also help to make the cultural milieu more sensitive and more aware of the importance and the rapidity of technological progress in the field of communications.

With this change, the Minister of Communications became responsible for all the cultural agencies – the National Film Board, the Canadian Film Development Corporation, the National Library of Canada, the Public Archives of Canada, the National Museums of Canada, the National Arts Centre Corporation, the Canadian Broadcasting Corporation, the Canada Council and the Social Sciences and Humanities Research Council. As well, various programs of grants and contributions to arts and culture, formerly with the Secretary of State, were put under the aegis of the Minister of Communications, among them, the Special Program of Cultural Initiatives funded from lottery revenues accruing to the federal government. The Minister of Communications thus has the responsibility for the formulation of cultural policy for the federal government and for the delivery of programs in that area. Through the department, the minister addresses the needs of performing and visual artists, libraries, museums, archives and galleries, as well as those of our cultural industries – book and periodical publishers, film and videotape producers, and the recording industry.

At the same time, the Prime Minister announced that the Ministry of State for Science and Technology had been assigned a leadership role with respect to space policy and development. The ministry of state is now responsible for space research, the development of space policy and the co-ordination of space programs among government departments and agencies.

The Department of Communications remains responsible for space research and development relating to communications, and the Minister of Communications retains his responsibilities with respect to Telesat Canada and Teleglobe Canada.

The information revolution

Innovations in information technology are succeeding each other so rapidly through the merging of computer and communications technologies that experts now refer to the "information revolution". The implications of these dramatic changes for Canada are profound, both economically and socially. Jobs for Canadians, expansions of Canada's industrial base, a favorable balance of payments and national sovereignty are all at stake.

The leading edge of the information revolution is expected to be felt first in the offices of the nation, where about half our labour force is employed. Nearly five million jobs will be affected as existing equipment and services are replaced, and without a strong Canadian showing, trade deficits in this area could exceed $4 billion by the mid-1980s. If Canada fulfills its potential as a world leader in communications and micro-electronics, we have a chance to capture a significant slice of both the domestic and world markets for automated office equipment. During the year, the department launched a $12.5 million program in the field of office communications, aimed at enhancing Canada's position in this burgeoning field.

Telidon, the Canadian videotex system developed at the department's Communications Research Centre and introduced in 1978, made significant headway during the year. This interactive technology allows the user to access through any transmission medium, computerized data banks from which information can be retrieved and displayed on a modified TV set. Major field trials were announced, to take place in Canada and in the United States, and a major sale was made in July 1980 to the government of Venezuela. In November 1980, the Telidon information coding system was recognized as one of three international videotex standards. Major progress was also made in developing Telidon data banks and in further advancing Telidon technology. In February 1981, the government announced that it would invest a further $27.5 million in the Telidon program over the next two years.

A special capability of Telidon is in captioning TV programming for the hearing-impaired. This special application was vigorously pursued during the year as part of the department's continuing efforts to improve communications for the handicapped.

Satellite communications

In the new information society, satellites are becoming increasingly important as a means of transmission. In Canada, they are taken for granted as part of the infrastructure linking Canadians to each other and to the world. Canada is already the world's largest per capita user of space communications, and we continue to explore the potential of the medium. Through co-operation between government, industry and user groups, we are testing the use of higher radio frequencies for new applications such as health care support, education, community interaction – and direct broadcasting by satellite. The world's first commercial service using these higher frequencies went into operation in Canada in September 1980, when a consortium of Quebec cable TV companies began beaming French TV programming to about 40 earth stations in Quebec. A variety of projects on Anik B are demonstrating that other new applications may also be commercially viable.

The department is providing continuing encouragement to the Canadian space industry through such measures as the transfer of technology developed by the department and by the expansion of the David Florida Laboratory at the Communications Research Centre so that it can now handle the assembly and testing of complete, large communications satellites. The combination of government support and industrial initiative has brought us to the point where we have a spacecraft prime contractor capability in this country. Spar Aerospace is now supplying Telesat's Anik D satellites – the first time our requirements for commercial satellites have been met by a Canadian firm. Export sales by Canadian industry are helping to improve our balance of payments in the space sector by off-setting the cost of launch services purchased from other countries.

Broadcasting

In broadcasting, our greatest problem is content. With communications satellites, coaxial cable systems, videocassettes and videodiscs in addition to conventional broadcasting transmitters, we have one of the most sophisticated delivery systems in the world today. But

there is a serious gap between this technical capability and our ability to produce enough programming of interest to Canadians.

To assist our content industries in generating a high volume of high quality Canadian programming, the government is using a range of policy instruments including the 100 per cent capital cost allowance on certified Canadian film and video productions. Steps being taken by the Canadian Radio-television and Telecommunications Commission (CRTC) are crucial to the development of Canadian content. The CRTC has, for example, endorsed the recommendation of the Therrien Committee calling for the introduction of pay-television in Canada. In addition, the Commission is now reviewing its Canadian content regulations for television and is holding licensing hearings for the extension of basic TV services via satellite.

Cultural policy

Cultural policy, a responsibility added to the portfolio of the Minister of Communications in 1980, is now undergoing a thorough review. A committee chaired by Louis Applebaum and with Jacques Hébert as co-chairman held hearings in 1981 and is preparing a report recommending long-term cultural policy. The committee's work is the central component in a process leading to the formulation of a government policy on arts and culture in 1982.

During the year, the department introduced a special program of cultural initiatives as a stop gap to aid important performing arts institutions that found themselves in a perilous financial situation, and to encourage organizations that have not incurred any deficits. This program will help to ensure that Canadians have greater access to the cultural resources of their country by developing a network of cultural institutions through joint funding with the provinces and the private sector.

Building for the future

Numerous breakthroughs in communications during the past decade have given rise to a host of new products and services. As we enter the 1980s, the pace of development is far from slowing down.

Through its national policies and programs as well as through the research it undertakes or sponsors, the department is working to strengthen Canada's position of leadership both in the development, manufacture and application of new communications technologies and in the development of programming and content. In doing so, the aim is to ensure they contribute positively to Canadian cultural expression and the fabric of our society.

The following pages describe the work of the department in more detail.

ARTS AND CULTURE

Important scientific and technological developments now taking place are bound to have a powerful impact on culture. These developments include the storing, processing, transmission and display of information. They affect many fields of culture: libraries, museums, publishing, film, television, radio, archives, the performing arts and so on. The inter-relationship between technology and culture creates new opportunities and challenges for both.

The transfer of responsibility for arts and culture to the department will serve to develop policies and programs which can help the cultural milieu become more aware of the importance and rapidity of technological progress in communications, and which will, at the same time, ensure that communications policy is formulated with the highest regard for cultural implications.

Federal cultural policy review

In August 1980, the Minister announced the formation of a Federal Cultural Policy Review Committee to study the needs and opportunities that lie ahead and to develop long-term cultural policy recommendations for consideration by the federal government. The last review of this type was the Royal Commission on National Development in the Arts, Letters and Sciences of 1949-51, better known as the Massey-Lévesque Commission.

The 20-member committee is the central component in a process leading to the formulation in 1982 of new government policies with respect to arts and culture. Composed of Canadians prominent in the arts and culture community, its chairman is Louis Applebaum, Toronto composer and conductor, and its co-chairman is Montréal writer Jacques Hébert.

To encourage contributions from Canadians in all walks of life, the committee published a 23-page discussion guide, **Speaking of our culture,** in November 1980, inviting submission of briefs. The deadline set for receiving briefs was March 8, 1981 and 1,100 documents had been submitted by that date. The committee then planned to invite some of those who made submissions to appear at public hearings scheduled to take place in key Canadian centres during spring and summer 1981.

Special program of cultural initiatives

A special program of cultural initiatives was announced in December 1980 to aid arts and culture organizations and activities across Canada. Financed through lottery revenues accruing to the government under a federal-provincial agreement, the program is a response to some of the urgent needs of cultural organizations. A total of $39.6 million is to be disbursed over three years.

Financing is available under four separate categories: once-only deficit reduction funding for cultural organizations, funding to improve the corporate management of cultural organizations and institutions, capital assistance for performing arts facilities and cultural institutions, and support for special cultural activities of national character and significance.

During 1980/81, 12 organizations received assistance totalling $2,214,280.

Cultural industries

Culture is not only a matter of artistic creation and appreciation. It is an economic activity that has become a multi-billion-dollar-a-year industry in Canada. Much of the industry is under foreign control.

Through a variety of programs, the department is addressing this situation and working to create an environment that will:

- promote increased access by Canadians to Canadian cultural products by ensuring the development and growth of Canadian-owned and controlled cultural industries;

- enhance the creativity of Canadians in these cultural industries; and

- develop new Canadian talent, and promote and increase the Canadian share of the market at home and abroad.

Book publishing

More than $6.6 million was made available to Canadian book publishers during the second year of existence of the Canadian Book Publishing Development Program, administered by the Department.

Most of this funding ($5.7 million) was disbursed among some 60 publishing companies owned and controlled by Canadians, of which $3.7 million went to assist marketing and $2 million toward assisting Canadian textbook publishing. Under the program, the Book and Periodical Development Council located in Toronto received assistance for a study of a computerized ordering and distribution system for the book industry, and for developing a strategy for implementation of such a system in the English-language sector of the trade.

Also under the program, assistance was provided to the Société de développement du livre et de périodique, the coordinating body for French-language publishers' associations, located in Montreal, for a major study on strategies for developing markets here and in France for Canadian French-language publications.

Preferential postal rates

The program of preferential postal rates for books, periodicals and newspapers mailed in Canada to domestic as well as foreign markets continues to facilitate access to Canadian printed material at home and abroad. Program costs in 1980-81 reached a level of $146 million. This program is especially important to Canadian magazines which are largely dependent on the postal service to reach their readers. There are over 3,000 publications which benefit from reduced postal rates in second class mail. In addition, postal rate privileges are also available to libraries, publishers and retailers for the mailing of books.

The periodicals industry

In an effort to obtain a better understanding of the Canadian periodical publishing industry, the department commissioned a research study consisting of an interim profile of the industry. The report, prepared by the Bureau of Management Consulting can be found in the departmental library.

A second study, still in progress at year end, is expected to yield a structured research program specifically tailored to the policy issues now facing the various industry sectors.

Sound industry

The Canadian sound recording industry is currently under examination by the department with a view to evaluating its needs and its opportunities in the face of rapidly changing technology and substantial shifts in consumer habits.

To provide a foundation for the development of federal policy for assistance of the Canadian sound recording industry, the department has commissioned a major study of that industry. This study, begun in April 1980, is expected to be completed early in 1982.

During 1980/81, the department provided financial support to industry associations to enable them to better represent their members' concerns to the government. In addition, the department initiated the development of the **Canadian Record Catalogue**, and a Canadian Record Catalogue data base, using Telidon, the first of its kind in the world.

Copyright

The necessary development and revision of copyright law is a fundamental and central element in the development of cultural and communications policy. The department is participating in the current government program of revisions to existing copyright legislation through the Interdepartmental Copyright Committee, whose chairman is provided by the Department of Consumer and Corporate Affairs, as well as through consultation with cultural and communications interests.

The department's major policy concern in this area is that copyright law should contribute to cultural development in today's technologically oriented world, providing adequate protection for creators and entrepreneurs while ensuring reasonable access to the public.

Program production policy

The department, in conjunction with the cultural agencies involved in the program production industry (CFDC, NFB, CBC and the Canada Council), is deeply involved in developing and implementing policy which will foster the growth and advancement of the domestic industry in a manner consistent with the federal government's cultural goals and objectives.

Film policy

During the summer of 1980, the department undertook an extensive review of the film certification program. Nearly 100 organizations were consulted, representing all segments of the film industry as well as the investment and business community. Representatives of federal and provincial departments and agencies involved with film were also consulted.

Film Festivals Bureau

The Film Festivals Bureau promotes Canadian films through participation in film festivals and exhibitions abroad.

During 1980/81, the bureau entered 1268 Canadian films in 156 film festivals, some in competition and some for exhibition only. At these festivals, Canadian producers had 964 films screened and won 242 awards. In addition, the bureau co-operated with other government departments and agencies to organize 11 special prestige screenings, involving 102 feature films and 15 shorts. Once again, the bureau set up marketing and press offices at the Cannes and Berlin film festivals, to promote and help sell Canadian films.

The bureau also administered $250,000 in grants, which were distributed to 11 Canadian film festivals.

Finally, the bureau published its annual **Cinema Canada** catalogue, containing complete, bilingual information sheets on the 59 Canadian feature films produced during the year. The catalogue was distributed to more than 2,000 international film critics, distributors and buyers, as well as to 200 Canadian embassies and commercial missions around the world.

Performing and visual arts

Most performing and visual arts in Canada are not profit-making or even profit-seeking. In these areas, a great deal of Canadian cultural activity will continue to rely on sources other than the box office. The government of Canada has played a critical role in these areas particularly through the Canada Council and the National Arts Centre.

During 1980-81 the Department supported efforts by the Canada Council to examine its policy regarding the development of the dance and 1981 was later proclaimed the Year of the Dance in Canada. The Department also participated with other federal departments and concerned arts and cultural organizations in an ongoing examination of issues of financial concern to artists such as copyright, fiscal measures and tourism, as they affect the lives and productivity of Canadian artists.

An examination of federal policy in support of the development of crafts in Canada, both the fine arts and industrial aspects of this area, was conducted in co-operation with concerned federal departments and the Canadian Crafts Council.

While this Department has no permanent program of financial support to the operations of cultural and artistic organizations, sustaining grants were provided in special cases to two national organizations serving the artistic and cultural community. The Canadian Crafts Council, a federation of associations representing the interests of some 30,000 crafts people, received a grant of $77,000 to help finance its ongoing operations.

Grants totalling $466,000 were awarded for similar purposes to the Canadian Conference of the Arts, a major umbrella organization of the Canadian arts community, representing approximately 500 arts and cultural organizations.

The department administers a special annual sustaining grant to the Fathers of Confederation Buildings Trust in Charlottetown, for the purpose of maintaining the Confederation Centre for the Arts as a national memorial to the Fathers of Confederation. The federal grant is calculated on the basis of four cents per capita of the population of Canada. In 1980, the grant amounted to $952,392. The department also provided a grant of $475,000 to the Confederation Centre of the Arts as part of the federal government's participation in the centre's capital repair program.

Museums and national heritage

Governments have a special role as the chief conservers and repositories of cultural heritage. The Canadian government has established a number of programs to identify and conserve the cultural heritage of the country for current and future use, study and enjoyment. While the department is responsible for policy decisions, the National Museums of Canada, the National Library of Canada and the Public Archives of Canada all play an important part in programs concerned with conserving Canada's cultural heritage.

One of the principal activities of the year under review was a series of consultations with the provinces concerning a program of indemnification intended to replace the commercial insurance paid by Canadian cultural institutions such as museums, archives and libraries that host exhibitions.

Another major activity was the co-ordination of an inventory of archives in 12 communities across Canada, under the Student Summer Employment Program of the Department of Employment and Immigration Canada.

In addition, there was close-co-operation with the Public Archives towards the revision of the Public Archives Act which dates back to 1912.

Cultural property

The year 1980/81 was the third full year of operations under the Cultural Property Export and Import Act, proclaimed in September 1977. The Act regulates the import and export of cultural property and provides tax incentives for individuals to dispose of their art to Canadian institutions.

The Movable Cultural Property Secretariat of the department monitors all cultural property export permits processed by a network of permit officers and expert examiners. When objects are found to be of national cultural significance, export permits are denied. Through an appeal process, the objects are either eventually exported or, if a Canadian buyer is found, retained in Canada in a public institution. During 1980/81, 175 applications for export permits were handled.

The first charges under the Act were laid by the RCMP early in 1981 for unauthorized export of cultural property. This enforcement of the legislation was noted by the media as well as the cultural community. The case had not been heard by the court at the end of the fiscal year.

Institutions and public authorities designated by the Minister are eligible for assistance in purchasing certified cultural property under the grants and loans program administered by the Secretariat and may apply for the certification of cultural property for income tax purposes. During 1980/81, four institutions were granted category A status, bringing to 120 the number designated for general purposes under the Act, and a further 10 were granted category B designation in regard to specific cultural property.

Thirty-one grants totalling $800,000 were made to 15 designated institutions to enable them to purchase cultural property of particular importance to the national heritage. These grants resulted in the retention in Canada or the return to this country of major items of culture heritage, including ethnography, military objects, decorative art, fine art and photographic material.

In addition to carrying out ministerial functions under the Act, the department provides administrative services to the Cultural Property Review Board. This board hears appeals on denials of export permits, certifies cultural property for income tax purposes as meeting criteria of outstanding significance and national importance, advises the minister on grants and loans to designated institutions, and determines what constitute fair cash offers to purchase.

A review of the legislation began during the year to study its effects on all the sectors involved. As a first step, a letter was sent to individuals, institutions and associations affected by the Act, inviting comments and criticisms. Observations pointed to directions for follow-up and discussion which continued into the new fiscal year.

Cultural research and statistics

As with other government activities, cultural policies and programs must have firm factual and analytical underpinnings in order to be effective. Since 1975, the Research and Statistics Directorate has attempted to develop such an information base on two broad fronts.

The Cultural Statistics Program, which is administered by Statistics Canada on behalf of the Department of Communications, continued to produce statistics on various aspects of culture in 1980/81. A survey of actors and actresses was completed, in addition to recurring surveys in the fields of film, publishing, recording, libraries, performing arts and museums. A national time-use survey was initiated by the directorate in order to establish more valid benchmarks for measuring time Canadians spend on cultural activities and to identify the context in which such activities occur.

Research activities during the past year included several major projects. One of these was the initiation of an interdepartmental study of the likely impact of home video, particularly videodisc,

on Canadian consumers, communications institutions, artists and arts organizations, program producers and related industries. Other studies initiated included a study of the structural and organizational features of the Canadian visual arts distribution system, a study of the sound recording industry in Canada, a survey of craftsmen in five provinces, and a survey of the employment terms and conditions of cultural executives.

Much of the Directorate's research was done under contract, thereby providing a stimulus for the development of cultural research expertise in the private sector.

TELECOMMUNICATIONS RESEARCH AND DEVELOPMENT

Innovations in information technology are succeeding each other and being diffused throughout the economy so rapidly that experts now speak of the "information revolution". The convergence of computer and communications technologies has created powerful systems with vast capabilities for computation, analysis and access to enormous amounts of information. Because of our achievements in telecommunications and microelectronics, Canada has a unique opportunity to benefit from the information revolution.

New information technologies are receiving increasing emphasis in the department's research and development efforts. Research programs also contribute to the orderly and efficient development of telecommunications networks and services and support the department's mandate to improve and extend utilization of the radio frequency spectrum.

While much of the research is carried out in-house, the department contracts out a portion of its research needs. Contracts awarded to universities encourage the development of academic centres of excellence. Industrial contracts allow for the transfer of technology, strengthening the innovative powers and the competitiveness of Canadian industry.

In addition to its own activities, the department carries out for the Department of National Defence, various research projects and provides advisory services in support of military communications systems. The department is also a source of expertise for other departments such as the Department of the Environment and the Department of Fisheries and Oceans.

Information technology

The department undertakes a number of programs to help keep Canada and Canadian industry in the forefront of new and rapidly developing information technologies. A main activity during the fiscal year has been in programs related to Telidon, the Canadian videotex system. Canada has an obvious interest in promoting Telidon as an international videotex standard. In November 1980, Telidon was accepted as one of three world videotex standards by the International Telegraph and Telephone Consultative Committee, the UN agency responsible for setting international telecommunications standards.

Other work includes research on coding schemes to allow for all-digital television and investigation into innovative display technologies, terminal equipment and storage media. Longer term research and development focusses on computer hardware and software tools relating to image-based interpersonal communications.

Telidon

Developed in the department's research laboratories and publicly introduced in 1978, Telidon is an interactive visual communication system which permits public access to computer-based information sources. Known generically as videotex, this type of system allows home users to call up written or graphic information for display on their TV sets. The Canadian Telidon is considered technically superior to other videotex systems, in that its unique system for coding information allows high resolution images to be obtained using low bandwidth communications systems such as telephone lines.

In February 1981, the government announced it would invest a further $27.5 million in the Telidon program over the next two years to ensure the existence of a commercially viable videotex industry in Canada with a capability to compete in export markets. This investment is expected to lead to the installation of 12,000 Telidon terminals by 1982.

Increased federal funding will be used for the following activities:

- purchase by the government of about 6,000 Telidon terminals to be loaned to industry for use in operating systems or trials;
- product research and development to reduce the price and expand the capabilities of the Telidon equipment, for example, by completing development of low-cost, very large scale integrated Telidon terminals;
- support for important national and international Telidon systems, including a national broadcast teletext service in both official languages;
- support for market development and standards; and
- support for public interest initiatives to permit disadvantaged groups, minorities and consumer organizations to exploit Telidon's potential.

Since the Department of Communications unveiled its Telidon technology in August 1978, numerous field trials and pilot projects have been announced, involving broadcasters, telephone companies, cable television firms, manufacturers and various information provider organizations. These trials are taking place both in Canada and in the United States. Field trials across Canada are being co-ordinated by the Canadian Videotex Consultative Committee, set up in 1979 to advise the deputy minister on the evolution of videotex in Canada. The committee held four meetings during the period under review.

The Canadian government's Task Force on Service to the Public will use Telidon as part of a nation-wide program to provide the public with improved access to government information and services. Telidon will be incorporated into most of the service bureaus to be set up in this pilot project, to test its use in providing government information. A preliminary data base has been created by pulling together a broad cross-section of information from major departments and agencies.

A major foreign sale was made in July 1980 to the government of Venezuela. Telidon is being used to provide information on health, social and economic aid programs to the vast numbers of people moving into Caracas from rural areas.

Canada's first commercial Telidon service was to go into operation in southern Manitoba in April 1981. Project Grassroots will offer farmers access to 20,000 pages of specialized information.

The department continued its promotional efforts during the year to increase the level of public awareness of Telidon. Some 400 demonstrations were put on for small groups of individuals in the department's regional offices and at headquarters. On a larger scale, representatives of the department gave approximately 100 public lectures or continuous demonstrations at exhibitions in Canada, in addition to international demonstrations and marketing tours.

One of the department's main objectives in the Telidon program is to encourage the development of an industry capable of producing and marketing Telidon hardware, software and services. Since 1978, five Canadian companies have started manufacturing a basic range of Telidon hardware and software. As well, Telidon has attracted more than 40 potential information providers.

In March 1981, the department published a report on Telidon information providers. The report gives an overview of the videotex field trials to be conducted in Canada within the next few years and reviews the roles and activities of information provider organizations as well as the costs and constraints they face.

A critical factor in the acceptance of videotex is the availability of well-indexed information. For this reason, the department carried out behavioral research during the year on the effectiveness of hierarchical or tree-structured indexes.

Meanwhile, the department is continuing its research to improve and enhance Telidon technology. Extensions are already in preparation for multi-mode interpersonal communications, a generalized photographic mode, picture manipulation instructions to turn each terminal into an information provider terminal, synthesized voice and audio output, and a generalized telesoftware language capability.

Both software and hardware are being developed to turn the powerful computing ability of the Telidon terminal into the main element of a flexible home or office computing system. In the not-too-distant future, a Telidon user will be able to receive complete computer programs down-loaded onto his own terminal, then disconnect from the host computer and operate independently. This holds particular promise for computer-aided learning, video games or calculations such as income tax.

Software is also being developed to allow direct access to mainframe computers by means of the Telidon network.

Office communications systems

It is becoming increasingly clear that the leading edge of the information revolution will be felt first in our offices where about half our labor force works and where automated equipment is already being introduced. Nearly five million jobs in Canada are potentially affected as existing equipment and services are replaced.

To ensure that Canadian products and services have their place in the nation's offices, the Minister announced a $12.5 million program for office communications systems in November 1980. The aim is to help Canadian industry capture a significant share of the burgeoning domestic and international markets that will supply the office of the future.

This initiative is intended to establish a Canadian industrial presence in the area of office automation technology and to assist prospective users in its effective application. The principal objectives of the program are to:

- design, develop and provide effective office productivity improvement tools, methods and systems;
- stimulate the development of a Canadian-based office automation industry; and
- facilitate the effective introduction and utilization of this new technology in the public sector through a series of field trials.

The first phase of the program is now under way, with a budget of about $2.5 million. Government and industry are working together to develop office communications systems, to organize field trials, to map out a detailed industrial strategy and to conduct technological, behavioral, social and economic research.

Phase Two, which is dependent on the results of the first phase, has received approval in principle for a budget of up to $10 million. Commencing in 1982, and extending for up to three-and-a-half years, the second phase of the program would fund development of electronic office equipment for field trials in government offices and would underwrite the cost of further research and product development.

Two advisory committees established by the department are guiding the implementation and delivery of the program:

- an industry committee, which advises on industrial development aspects; and
- a user's group which will co-ordinate field trials and office automation development within the Government of Canada.

Heightened public awareness is important to this program. Business and industry as well as the general public need to be aware of opportunities, issues and concerns. With this in mind, the department produced a publication, videotape and other materials during the year dealing with the office of the future.

Spectrum research

The department carries out research on the radio frequency spectrum in order that this invisible resource can be used more effectively. Although highly technical by nature, the results of this work benefit all users of radio.

Research continued during the year on the propagation of radio waves in the VHF and UHF frequency bands used by Canadian broadcast and mobile services.

A VHF/UHF prediction program now enables engineers to determine radio coverage patterns over different types of terrain. The program is currently being used by the Ontario regional office of the department and is being expanded to other regions, for eventual release to industry. In connection with this program, instrumentation was developed to characterize the effects of multipath transmission which degrades digital transmissions in the land mobile service, and to improve the accuracy of radio coverage predictions in urban areas.

The department also studies radio propagation over the sea in the VHF/UHF bands, to assess potential interference problems that might result from increased requirements for communications in coastal waters in support of oil exploration activities.

In the area of microwave propagation, studies were carried out for both terrestrial and earth-space applications. In addition to in-house research on rain attenuation and multipath fading at 7 and 15 GHz, a number of studies were conducted in co-operation with other agencies. These included assessment of the performance of wide-band 8 GHz

digital systems on over-water paths, research on ice-crystal depolarization effects at 28 GHz, and the study of the potential of using various earth station sites to improve satellite communications in the 11/14 GHz bands.

Radio communications

The department has an on-going research program designed to carry out studies of the electromagnetic environment in the radio frequency range of 150 kHz to 10 GHz. For the purposes of these studies, the electromagnetic environment is divided into the areas of signal (deliberate, intelligent transmissions) and noise (man-made or natural), as each requires different types of instrumentation for measurement, and different methods of quantification and description.

Signal interference affects the performance and reliability of radio communications. During the year, comprehensive measurements of urban and suburban signal levels were made in Toronto and Montreal for AM and FM radio, TV, land mobile and the General Radio Service, commonly known as CB radio.

Radio noise data are required to provide measured levels for standards, for the design and performance prediction of communications systems and for the assessment of radio sites and interference sources. Initial measurements were made of microwave noise from high voltage power lines. Further measurements will be made in 1981/82 when more sensitive equipment now being developed is ready for use.

The department's research into electromagnetic interference and compatibility has the objective of controlling the electromagnetic environment. Investigations continued this year into the re-radiation of medium frequency radio signals from hydro lines and high-rise buildings located near transmitting facilities, since these affect reception.

Contract work continued at the Technical University of Nova Scotia and Université Laval on the effect of radio noise and interference on TV picture quality.

Optical communications

Canadian research into fibre optic communications began in 1972. Now there are three large fibre optics research centres and three important manufacturers of fibre optics equipment. Experimental and operational systems using optical fibres now exist in British Columbia, Alberta, Manitoba and Ontario, and a major system is to be constructed in Saskatchewan.

The first multimedia trial of fibre optics in a rural environment is taking place in Elie and St. Eustache, Manitoba, under the sponsorship of the department, the Canadian Telecommunications Carriers Association and the Manitoba Telephone System. The trial involves equipping 150 homes and businesses with fibre optic cables which will simultaneously carry TV, FM radio, telephone and Telidon signals to each subscriber. Cost of the trial is expected to run to $9.6 million, of which the department is contributing $4.8 million.

The department is continuing its research in fibre optics to help keep Canada at the forefront of this advanced transmission technology.

The generation of interference within fibre systems was modelled theoretically and confirmed by measurement. Researchers showed that, at least in simple networks, interference produced at connectors, splices and passive branching couplers can be maintained at a level that will not severely affect fibre optic networks.

A contract was let to a Canadian firm to develop high-speed pulsed laser-source packages intended for testing advanced fibre optic systems and for other applications.

The basic branching component for fibre networks is a directional coupler. The department has now developed a coupler in the form of a fused fibre junction which features low insertion loss, high directivity, and broad optical wavelength range. Rugged packaging techniques for this device have been developed and are being transferred to a Canadian company for exploitation. The couplers have applications not only in optical communication systems, but also in optical fibre sensors such as gyroscopes, hydrophones and magnetometers.

Radio systems

Through its research and development work, and through the transfer of technology to industry, the department helps in the development of new radiocommunication services and furthers the ability of Canadian industry to provide radio systems products.

A new radiotelephone system, RACE (radio-telephone with automatic channel evaluation), underwent successful field trials in British Columbia during the year. The system can provide operator-free direct dial telephone service to users up to 600 km from a main communications centre. System components include a modified high frequency single sideband solid state transceiver; a wideband antenna; a speech processing unit (called Syncompex) which reduces noise on the circuit; and a controller interface unit which links the radio to the telephone system without an operator. Also tested in the field trials was a subsystem called SPRITE, designed to improve the reliability of high frequency radio data transmission. At year end, the technology was being transferred to industry for commercial production.

During the year, the department undertook a number of research activities related to mobile telephone. These included assessing user requirements and market demand for public mobile radio telephone systems; and analysing cost impacts of spectrum trade-offs for satellite/terrestrial public mobile telephone services.

Under contract to the department, an industrial study was conducted to investigate how a digital voice modem developed in the space sector of the department would perform in a simulated mobile radio environment. As part of the work, a simulator was constructed for further studies of mobile systems.

Rural communications

Research was conducted to complete the work of the department's Rural Communications Program, an activity aimed at developing information on rural needs and how they might be met. A major part of this research was in connection with the Rural Services Demand Survey. The department expects to publish a report on the survey in 1981/82.

University research

In 1980/81, 30 contracts were awarded to 22 institutions for mission-oriented research in the areas of communications technology, systems and networks and socio-economic aspects of telecommunications. The budget for this program was $800,000.

Work will include a study of the effects of information technology in Canada, analysis of Parliament's objectives and future legislative requirements for the Canadian broadcasting system, and a study of interactive television. Other areas of study encompass northern native TV programming, telecommunications needs of the handicapped, office and computer communications, teleconferencing, multilingual broadcasting and a wide variety of work touching the fields of spectrum management engineering and communications technology.

The university research program complements and enriches in-house research, helps build communications expertise in the university community and stimulates the development of better relationships and co-operation amongst industry, government and universities.

Under a separate program with a budget of $35,000, 13 contracts were awarded to six French-language institutions for scientific and technical research. The purpose of this program is to encourage the development of centres of excellence where French is the language of work, and to ensure that French-language institutions participate equitably in research activities that are contracted out by the department. A long-term objective is to provide a pool of talent for recruiting French-speaking scientists and technicians into the federal public service.

Co-operative program with industry

This program assists in the transfer of technology from the department's research laboratories to Canadian industry. Administered by the department, it provides financial help to firms in the form of contracts to advance the development of specific technology, identify relevant economic factors, determine product acceptability and product position in the marketplace.

During 1980/81, nine contracts worth $415,000 were awarded to Canadian firms under this program.

SATELLITE COMMUNICATIONS

The 1980s are expected to be a critical period in the development of satellite communications applications not only in Canada but around the world. Requirements are foreseen for satellites to broadcast radio and TV programs directly to home receivers, and for satellite systems to extend mobile radio and telephone service to all corners of the country, including territorial waters. The department has invested heavily in programs such as Hermes and Anik B satellites, designed to explore the potential of new higher frequency satellite technology and services. Contracts have been let by Telesat Canada for the new Anik D series of communications satellites to replace the existing Anik A series, and also for a new series, the Anik C satellites, which will operate in the higher frequency (12/14 GHz) bands. In coming years, the department foresees increasing involvement in satellite technology development.

The department continues to support Canada's space industry through measures such as the expansion of the David Florida Laboratory and the transfer of technology to industry. A long-standing objective of the department was realized last year when the prime contract for Telesat Canada's Anik D satellites was awarded to a Canadian firm, Spar Aerospace. This marks the first time that Canadian commercial satellites will have been supplied by a Canadian company.

Anik B

The department has leased some of the capacity on board Anik B, Canada's latest satellite, to conduct a series of pilot projects to test the technology and applications of new, higher frequency (12/14 GHz) communications satellites.

In September, the government approved a $5.4 million extension to the Anik B pilot projects program. The program was established in 1977 to allow for extensive testing of the more promising communications services identified with the experimental Hermes satellite.

Ten major pilot projects are being continued, and six new ones were approved in November 1980, as were a number of new demonstrations and experiments. These projects are in the areas of business communications, education, health care delivery, native communications and broadcasting technology.

Particularly important is a pilot project to gain field experience with direct-to-home and small community satellite broadcasting services. This project has two components, one in Ontario through TVOntario, and the other in British Columbia, the Yukon and the Northwest Territories, through the CBC and CTV. For this project, the department contracted out to Canadian industry the development of small, low-cost earth terminals suitable for home reception. About 100 of these stations, using 1.2 m and 1.8 m diameter antennas, have been loaned to individuals, community groups and cable companies in remote areas to receive TV programming direct from the satellite.

Through the Anik B program, Canada became the first country with commercial satellite service in the higher 12/14 GHz frequency band, when a consortium of Quebec cable TV companies (La Sette) leased one of the 12/14 GHz channels to beam French television programming to about 40 earth stations throughout Quebec, starting in September 1980.

David Florida Laboratory

Following a two-year, $18 million expansion and upgrading program, the department officially opened its new satellite test facility in September 1980.

The David Florida Laboratory is a fully-equipped national centre for the assembly and environmental testing of complete, large communications satellites and aerospace subsystems. It now has a thermal/vacuum chamber big enough to handle satellites compatible with the U.S. space shuttle orbiter, as well as enlarged vibration and anechoic chamber test facilities. The lab is unique in Canada, and the fact that most of the equipment is state-of-the-art sets it ahead of any single facility in Europe as well as most U.S. facilities.

Completion of the laboratory is in line with the government's long-standing objective of developing a Canadian prime contractor capability for the supply of satellites and related space hardware. The lab's world-class facilities enhance the ability of Canadian industry to compete for both domestic and export satellite and aerospace system sales. Industry will pay to use the lab on a rental basis.

The first satellite to be checked out in the new facility, Anik C-2, entered the lab in October 1980. At year end, the facility was also in use on the Anik D program.

Industrial technology development

The department is also encouraging the space industry to develop components and subsystems expected to be required for future Canadian and export satellite programs, through a technology development program begun in 1976.

About $2 million in contracts were let to Canadian firms during 1980/81. Current efforts include development of:

- super high frequency space technology, to help Canada maintain its competitive position in 12/14 GHz satellite components and subsystems, together with an extension of this work to higher frequencies (20-30 GHz) likely to be used in the future;

- new technology applicable to small super high frequency earth terminals for direct-to-home TV, cable TV, radio and telephony applications;

- spacecraft power systems technology, including new electronic battery management systems;

- feasibility studies and development of advanced electronic components, including gallium arsenide field effect transistors for use in satellite transponders, earth terminals and emergency locator transmitters; and

- dynamics and control systems technology required for future commercial communications satellites and other Canadian spacecraft.

Australian DOMSAT bid preparation support

The Australian government is planning a national satellite system, DOMSAT. For more than a year, Canadian government and industry have focussed their marketing efforts on this major requirement for which Canadian technology and expertise is particularly well suited. In September 1980, the department received approval for an expenditure of $1,250,000 over a two-year period for bid preparation and technical support to enable Canadian industry to submit co-ordinated bids for equipment and services.

A number of Canadian companies submitted bids on important elements of the DOMSAT, in most cases as major subcontractors to possible prime contractors. The potential value of these bids is in excess of $50 million Canadian.

Satellite-Aided Search and Rescue (SARSAT)

The proposed Satellite-Aided Search and Rescue (SARSAT) project is an experimental program to demonstrate and evaluate the use of space-borne technology for detecting and locating emergency beacon signals operating at the 121.5, 243 and 405 MHz distress frequencies.

The concept calls for low altitude (850 km) polar-orbiting satellites to receive distress signals and relay them to a ground station. Automated signal processing equipment in the ground station estimates the position of the distress beacon with an accuracy of 10-20 km based on doppler shift information. Rescue vehicles can then be sent directly to the emergency site with a minimum of searching.

Under a Memorandum of Understanding signed in 1979, the United States, Canada and France are co-operating in this project. The three SARSAT parties subsequently agreed to undertake a joint demonstration program with the Ministry of Merchant Marine of the Soviet Union. Countries in addition to these four have expressed interest in participating in the demonstration phase of the program and mechanisms to include them are under discussion.

Canada is providing three satellite-borne repeaters (the first of which has been delivered to NASA) and a ground station (to be delivered in June 1981) while the U.S. is modifying three weather satellites to carry the SARSAT equipment and procuring new beacons for distress signal detection by space techniques. France is supplying an on-board signal processor and is also procuring one ground station.

Large satellite (L-SAT) program of the European Space Agency

The European Space Agency (ESA) plans to develop and demonstrate a large multi-purpose spacecraft designed to meet the requirements of future commercial telecommunications applications. The program is supported by a number of ESA member countries.

During 1980/81, Canada won approval to participate in the definition phase of this program. Spar Aerospace was chosen as the solar array subcontractor in the face of strong European competition, and went on to prepare a detailed proposal for the development and manufacturing phases.

Canadian industry also submitted bids to the prime contractor, British Aerospace, covering significant elements of spacecraft integration and testing power system components and radio components.

Although the L-SAT program is still at the study stage, ESA and the participating nations have decided that if it goes ahead, a major part of the spacecraft environmental test activities would be carried out in Canada at the David Florida Laboratory and the National Aeronautical Establishment, and that Spar Aerospace would perform major systems integration and test work in support of British Aerospace.

Mobile satellite (MSAT) program

For several years, the government has been studying a new type of geostationary satellite system, known as MSAT, to meet the needs of various government departments and the military for specialized UHF communications in remote areas and coastal waters.

During 1980/81, the concept was extended to include public communications services through additional capability. The government approved a $2.2 million expenditure over two years for concept definition and feasibility studies for a mobile satellite system to provide nationwide mobile communications services, mainly in the 806-890 MHz frequency band.

Under this concept, a demonstration system could be launched in 1987 and used over a seven-year period for experiments and to provide pre-operational services such as voice and data communications to land vehicles, ships and transportable terminals.

Other activities

In addition to the programs described here, the department provides specialist expertise to support space applications programs sponsored by other departments and agencies. These programs include military satellite communications, aeronautical and marine navigation, search and rescue, remote sensing, surveillance, weather forecasting and development of the remote manipulator for the U.S. space shuttle.

ISIS II

As the year ended, ISIS II, the last of Canada's scientific satellites, marked its tenth anniversary in space, still fully operational. Between 1962 and 1971, Canada launched four ionospheric research satellites. Each had a design lifetime of one to two years, but all worked for at least 10 years, greatly advancing man's understanding of the physical processes of the upper atmosphere.

ISIS II was the final and most sophisticated spacecraft designed and built by Canada under the International Satellites for Ionospheric Studies program, which this country initiated. The satellite carried 12 experimental packages, including one which produced the world's first scientific images of the aurora borealis, as seen from above.

BROADCASTING POLICY

As part of its mandate, the department develops and recommends policies and carries out studies in various areas of communications, including broadcasting.

Policy for Canadian television

In October 1980, the minister announced a series of policy initiatives to strengthen Canadian program production industries. The objective is to stimulate development of a mature program production industry so that the Canadian broadcasting system can provide greater diversity of programming for both mass and specialized audiences. A parallel objective is to encourage full exploitation of communications technologies so that all Canadians can enjoy a basic package of television services.

A number of initiatives were taken during the year to promote the extension of a range of basic television services to under-served Canadians in remote and rural areas.

After holding public meetings across the country, the CRTC Committee on Extension of Service to Northern and Remote Communities (the Therrien Committee) published a report on satellites, broadcasting and pay-TV in July 1980. This was followed by licensing hearings in February 1981 to consider applications for satellite network broadcasting licences for the provision of a variety of radio and television programming services from Canadian networks, Canadian stations and other Canadian sources to people in remote and under-served areas, with particular importance accorded to regional needs and the broadcasting requirements of the native peoples.

Meanwhile, in October 1980, the minister endorsed early action to license a multi-channel Canadian satellite television service to meet the viewing needs of the 2.8 million Canadians having access to only two TV channels or less.

In line with this position and with a recommendation of the Therrien Committee, the department — in consultation with the CRTC, the CBC, CTV and TVA (the private French-language TV network) — contributed towards arrangements for the interim distribution of CTV and TVA network programming via the Anik satellite system to remote communities coast-to-coast. The new service started in January 1981, offering 60 hours a week of programming, transmitted during periods when the House of Commons was not sitting, and carried on satellite capacity leased by the CBC for transmission of House proceedings. The service will continue pending the outcome of CRTC hearings on the extension of basic services.

Work was begun on a review of northern native television needs, with a view to determining what role the federal government might play in this area. Pilot projects under the department's Anik B communications program were successfully implemented by the Inuit Tapirisat of Canada and Taqramiut Nipingat Inc. with the result that Inuktitut television programs, produced in Inuit production centres, were distributed via satellite over a period of several months to Inuit communities in the Northwest Territories and northern Quebec.

Communications and the handicapped

To contribute to the efforts of the House of Commons Special Committee on the Disabled and the Handicapped, the Minister appeared before the committee to review the state of communications services for the handicapped and to seek improvements in this area. The Special Committee's report, **Obstacles**, was published in February 1981, and the department immediately began work on responding to several of the recommendations it contained.

During the year, the department gave wide distribution to reports on the communications needs of the hearing-impaired; television and the hearing-impaired; and radio reading services for the blind. An additional study was commissioned on the telecommunications needs of the print-handicapped. The department began an examination of the best approach to delivering television services to the hearing-impaired through the introduction of closed captioning in Canada.

Educational use of satellites

The Federal-Provincial Task Force on the Use of Satellites in Education completed its examination of costs and technology in the delivery of educational services via satellite. A final report was released in January 1981, on the occasion of a meeting between the Minister of Communications and provincial ministers of education.

Discussions are now under way between federal, provincial and Telesat officials, with a view to securing Anik C capacity so that operational educational satellite services can be established. Meanwhile, the extension of the department's Anik B program has cleared the way for continuation of several educational pilot projects.

The educational use of satellites has been facilitated by the government's decision, announced in November 1980, to accept licence applications from provincial education authorities who wish to own and operate television receive-only earth stations.

Border broadcasting

In August, the minister issued a statement expressing regret that the U.S. Administration had reached an "affirmative finding" on the complaint by 14 U.S. border TV stations against Section 19.1 of the Canadian Income Tax Act and decided to propose legislation which would mirror Canadian law by disallowing for U.S. income tax purposes the cost of advertising placed with foreign stations and directed at U.S. audiences.

The minister said that Section 19.1 of the Canadian Income Tax Act had served Canada well, and would not be changed. Under this section, advertising placed on a foreign station but directed primarily at Canadian audiences is disallowed as a deductible expense.

Social and new services policy

The department is monitoring and evaluating the impact of new information technologies such as videotex and videodiscs, and new communications services such as cable satellite networks, particularly as they relate to people's needs (for example, for community information) or to their rights (such as the right of access or the right of privacy).

Among the areas receiving special attention during 1980/81 were:

- provision of cable-delivered entertainment and non-programming consumer services;
- developments in interactive cable and two-way television;
- institutional impact of emerging technology on the cable industry;

- social research conducted in the U.S., the U.K., Japan and France in connection with videotex field trials; and

- social implications of videotex in Canada, particularly within the context of Telidon field trials.

Regulatory affairs

Since the early 1970s, the department has been working towards reform of existing legislation governing telecommunications, cable television and broadcasting. The first phase of the legislation came into effect in April 1976, establishing the Canadian Radio-television and Telecommunications Commission (CRTC) as the sole regulator of all broadcasting undertakings and telecommunications carriers subject to federal jurisdiction.

The government has introduced phase two of the legislation in Parliament three times since 1977, but it has not yet been passed. This legislation sets broad objectives for our telecommunications system and defines more precisely the relationships among its various parts.

The government intends to introduce telecommunications legislation once again, as soon as the Parliamentary schedule permits. The legislation would provide a framework for the orderly development of our entire telecommunications system in response to the new technologies and the issues they raise. Canada would thus be able to give a new coherence and direction to communications and cultural policy and to respond speedily to the new possibilities opened up by the information revolution.

During the year, the department reviewed a variety of other regulatory matters including:

- the regulatory status of the cable industry;

- implications of copyright law for broadcasting and cable;

- the issue of balance in broadcasting;

- advertising on the CBC; and

- the issue of competing applications on the renewal or transfer of broadcasting licences.

COMMUNICATIONS ECONOMICS

The department's economic studies have focussed increasingly on the impact of information technologies on the Canadian economy generally, and on the communications industries in particular.

Economic policy division

In light of the rapid diffusion of information technologies and its implications for the structure and regulation of the communications sector, the department created a new division in October 1980 to combine responsibility for the conception, development, formulation and assessment of economic policy alternatives. This organizational change supports the department's mandate to ensure the orderly development of Canadian communications industries and services.

Economic development framework

A two-year project was started to examine the growth potential of the main components of the communications and information sector of Canadian economy and to identify major issues in each component area. The six groupings are: message transmission; program production; program distribution; print production and distribution; computer services; and equipment production.

The project will examine the sector's contribution to the development of the Canadian economy and will investigate policy measures that could be implemented to foster its development. The department's long-range objectives are to establish a policy framework for the economic development of the communications sector and to formulate specific policies and programs aimed at strengthening the major components (hardware, software, content and delivery) of the communications and information sector in a co-ordinated manner.

TV program production

Another project was undertaken to assess the growth potential of the television program production industry in Canada in face of the evolving competitive environment.

The results of this project will provide a major input to federal broadcasting strategy and will enable the department to bring to bear economic considerations on the analysis of many pressing broadcasting and cultural policy issues.

Transborder data flow

An interdepartmental task force on the transborder flow of data was established by the government in February 1981. The department provides the chairman as well as the secretariat for this group. The task force is an interdepartmental mechanism for joint planning and co-ordination of federal policies and programs relating to transborder data flows, with particular attention to sovereignty and economic implications.

Telecommunications studies

The department is also engaged in activities relating to its mandate to promote continuing efficiency among telecommunications carriers. These include application of the updated econometric model of Bell Canada to study the company's application for a rate increase, and the second phase of a joint project with the Canadian Telecommunications Carriers Association to study productivity and economic efficiency. The main aim of this study is to determine common bases for analysis of year-over-year improvement in utilization of resources. Virtually all productivity factors will be examined, including monetary and physical capital, labor, material and service costs, revenue from all sources and taxes. Interpretation of the data developed during the study will give the industry greater control over use of resources and improve the department's ability to develop policy.

In line with its responsibility for the orderly development of the industry, the department has undertaken various studies related to structural changes that affect pricing and competition. Among these are a preliminary study of the CRTC interim decision liberalizing terminal attachment rules in Canada and an assessment of the application of integrated financial and economic analyses to the study of vertical integration and the boundary of natural monopoly in the telecommunications industry.

In co-operation with the University of Victoria and the École des Hautes Études Commerciales, the department organized a major conference, "Telecommunications in Canada: Economic Analysis of the Industry". Held in Montreal in March 1981, the conference

was attended by some 200 delegates. Conference proceedings are to be published in the coming fiscal year.

In the area of informatics, two university studies are in progress to examine the employment impacts of computer/communications technology. Within the department, analysts have completed a two-year study to forecast the demand for Telidon services over the next 10 years. Another completed study dealt with office automation, assessing the current equipment base and growth potential to 1985.

Economic development

One of the department's current major concerns is to promote the efficient use of the latest communications technologies, and to maximize the associated industrial benefits. Economic and econometric studies are being carried out to forecast demand and supply trends in the Canadian telecommunications system. In March 1981, the department released a report, **The Supply of Communications Equipment in Canada**, describing the structure and behavior of the communications industry.

The department is also studying economic aspects of intercorporate relationships, including vertical integration. One such study involved investigation of the Bell/Northern intercorporate association in the context of the Restrictive Trade Practices Commission inquiry.

On the international level, economic analysts from the department participated in an OECD working group preparing a report on the telecommunications equipment sector in member countries, with a view to promoting trade liberalization in this area among member countries.

Economic statistics

The department maintains several time-series data bases covering the communications and informatics industries.

Two statistical studies were published during the year, one giving financial statistics on Canadian telecommunications common carriers for 1979, the other on office occupations with special emphasis on the information economy, the office of the future and the impact of new technology.

The department contributed extensively to a study on aspects of telecommunications development in isolated or underprivileged areas of countries. The study is to be published by the International Telecommunication Union in a reference manual for use by the developing nations.

Special attention is now being given to the development and integration of new statistical sources dealing with broadcasting program production, reach and availability of Canadian content and the Canadian computer and informatics industries.

TELECOMMUNICATIONS SYSTEMS AND SERVICES

Canada, already a world leader in satellite communications and digital data transmission, is continuing to develop new communications services through efforts such as projects on the Anik B satellite; fibre optics trials; field tests of Canada's two-way television technology. Telidon; and planning for office communications systems of the future. We also lead the world in the total capacity of our telecommunications facilities. Telephone, radio and television are available to close to 100 per cent of the population – and cable TV, with penetration at 54 per cent, is more widespread in Canada than in any other industrialized country.

One of the department's major objectives is to ensure that Canada's telecommunications systems and services evolve efficiently and economically in response to advances in technology and the needs of Canadians.

Open systems interconnection

It is clearly desirable for Canadian computer users to be able to operate through the different national and international telecommunications networks and between hardware and software acquired from different suppliers.

During 1980/81, the department initiated and co-ordinated studies on open systems interconnection in federal projects as well as business and public systems, and made significant contributions in this area to the International Telegraph and Telephone Consultative Committee (CCITT) and to the International Standards Organization.

Standards

We are on the verge of extensive and sophisticated electronic information systems based on new technologies such as Telidon. These will mean increased traffic, systems, terminals and facilities — and a crucial need for standards to ensure compatibility. National and international standards are a key to maintaining a competitive environment and to developing a world-wide market for Canadian communications systems and services.

At the national level, the department organized a national technical committee on videotex standards, and a government special interest group on national standards relating to electronic office automation. The department also worked on national standards for fibre optics and public mobile telephone systems.

In addition, the department participated extensively in the co-ordination and development of national and international studies on the interconnection of networks for voice, data and text communications, leading to standards recommendations at the CCITT.

Computer communications

The main thrust of the department's research in this area during the year was computer protocol development, and formal description and validation of protocols. Other contributions were made to the specification of protocols for Telidon.

Research was also carried out on current and future development of the integrated services digital network. Specifically, network services and their characteristics were investigated, and alternatives were developed for implementation of this network and associated subscriber access protocols.

Transborder satellite communications

Further work was done during the year in developing a policy governing the use of satellites for the carriage of telecommunications between Canada and the United States, and studying the implications of such a service for existing terrestrial transborder facilities and intercarriage arrangements.

Regulatory matters

In August 1980, the CRTC approved Bell Canada rate increases for residential and business services, long distance calls and pay phone charges. In addition, the CRTC ruled that all profits from Bell's Saudi Arabian project would be considered as regulated revenues.

After considering all petitions received, the Governor-in-Council decided not to vary or rescind CRTC Decision 80-14.

The Governor-in-Council also decided not to vary or rescind the earlier and related CRTC decision of 1978 and 1979 on this issue, since profits earned by Bell from the Saudi Arabian contract in 1978 and 1979 had already been included in regulated revenues.

However, The Governor-in-Council gave particular attention to the concern expressed by several parties that the decision concerning profits from this contract removed a significant incentive for Bell to seek out foreign contracts.

The minister issued a public statement expressing the government's support of trade initiatives of the kind undertaken by Bell in Saudi Arabia and welcoming the CRTC's intention to hold a separate hearing on the regulatory treatment of foreign ventures.

MANAGING THE RADIO FREQUENCY SPECTRUM

Thousands of signals fill the airwaves. Even with advances in technology, there is a limit to the number of frequencies available for communications, especially in urban areas.

Under the Radio Act, the minister is responsible for managing the radio frequency spectrum, the electronic highway of modern telecommunications.

In the face of increasing spectrum congestion and a large number of radio licences, the department must manage the spectrum effectively and efficiently. To meet this challenging mandate, the department allocates frequencies for different communications services, licenses and regulates the use of radio, develops standards and specifications for all users of the resource and promotes more effective use of the spectrum.

Spectrum policy

A proposed new Canadian table of frequency allocations was published in June 1980. The two volumes of proposals take into account the decisions of the 1979 World Administrative Radio Conference, the first general radio conference in 20 years, which covered all aspects of international telecommunications regulations governing shared use of the radio spectrum. The final acts of this conference come into effect on January 1, 1982. Comments on the Canadian proposals were due by early October.

In November, the minister announced simplified licensing procedures for television receive-only (TVRO) earth stations in order to give Canadians easier access to radio and TV programming delivered by Canadian satellites. A large increase in applications for this type of terminal is expected, as Canadian satellites expand their carriage of television programming.

The change reduces the time required to license a TV dish from up to 18 months to no more than 90 days where no protection from radio interference is requested.

In addition, already licensed TVRO terminals are now permitted to receive radio program signals carried on the same satellite channel as TV signals. This change will facilitate the wider distribution of radio programs to remote communities at minimum cost.

At the same time, the minister announced that his department would accept applications for TVRO stations from provincial educational agencies and authorities, and that a more general review of satellite earth station policy would be undertaken with particular emphasis on receive-only terminals; the treatment of special services such as scientific, meteorological and earth resources; and the possibility of offering an exemption from licensing for certain receive-only stations. Interested parties were invited to comment.

This liberalization of earth station licensing policy is largely a response to the potential of satellite technology to bring at least a basic television service to all Canadians, especially those living in remote and under-served areas.

A policy review of microwave licensing was announced in December 1980, relating to intercity delivery of signals for use by broadcasting undertakings. The need for this review arose when the CRTC approved intercity distribution of special broadcast material such as children's programming and proceedings of the Ontario legislature. The department is now reviewing whether additional spectrum should be made available for this purpose. Public comment was invited through notices published in the **Canada Gazette**, and 28 submissions were received.

Licensing

For the second consecutive year, the number of radio licences in force decreased. The 1980/81 total was 1,157,256 down 11 per cent from the previous year.

This decrease in radio station licences was due to the drop of 22.3 per cent in the number of General Radio Services (GRS) licences in force. The total GRS licence population now accounts for only 55.1 per cent of the total, compared with 63 per cent last year.

In other licence categories, there was an overall 11.8 per cent increase, and the number of new licences increased by 13.5 per cent. For the second year in a row, the number of licensed earth stations doubled. At the end of March 1981, there was a total of 232 authorized earth stations, compared with 109 a year earlier.

The number of certificates of registration issued to United States licensees continued to decrease, dropping 60 per cent from 23,473 to 9,415 as a result of the Canada/U.S. agreement signed in 1979.

Altogether, the department processed 429 applications for space or earth stations, three applications for Canada-wide radio systems, and six applications for foreign government stations. A total of 1,643 permits were issued to foreign radio licensees, allowing them to operate their equipment while visiting Canada.

A large part of the day-to-day spectrum management function of the department is performed by regional staff of the department. To ensure uniform work methods and services to the public, the department provides standard

instructions to radio inspectors, monitoring operators and other personnel. The department also administers a national program of quarterly examinations to qualify amateur and professional radio operators.

Radio regulations

Regulations issued under the Radio Act provide a legal framework for ordering and controlling the use of the radio frequency spectrum.

Under a formal consultative program, the department drafts proposed regulations, then publishes notices to the public describing the proposals and inviting comment. All comments received by the deadline (usually 90 days from the date of notice) are taken into consideration before regulations are finalized and implemented.

Among changes made to the Radio Regulations in 1980/81 were the following:

- an amendment to the General Radio Regulations to exempt from licensing low-power devices transmitting momentary signals in remote control and security applications, and also to allow them to operate at additional frequencies;

- an amendment to the General Radio Regulations to exempt low-power biomedical apparatus used in the 174-216 MHz band from licensing requirements and to relax certain technical provisions applying to cable converting television apparatus; and

- a revision to the Radio Interference Regulations to clarify regulations limiting permissible radio noise from the spark emission systems of internal combustion engines and to introduce a new measuring procedure of the Canadian Standards Association.

Type approvals

The department tests new radio equipment to ensure that it meets standards established under the Radio Act. A total of 642 models received type approval during the year.

Subsequent audits are carried out to ensure that new units of approved equipment continue to meet established standards. Post audits were performed on 28 radio transceivers.

Enforcement

During the year, the department stepped up its investigation into the illegal operation of radio stations. Infringements of the Radio Act and Regulations include unlicensed operation, transmitting at the wrong power or frequency, unauthorized modification of equipment and improper use of the airwaves. Altogether, there were 24 infringement reports, 15 licence revocations or suspensions, 12 forfeiture orders and 21 prosecution cases. Public education efforts have been intensified, to make sure that those who wish to use radio communications are aware of requirements for licensing and, even more important, aware of the need to respect regulations so that radio users can make greater use of the spectrum with minimum interference with one another.

In October 1980, the minister announced the government's intention to crack down on unauthorized satellite earth stations which threaten the integrity of the Canadian broadcasting system through unrestricted, unregulated interception and redistribution of U.S. satellite TV signals in urban Canadian areas.

Enforcement actions were subsequently taken against a number of urban earth station operators distributing U.S. satellite television in apartment complexes and hotels, without authority from the department or the CRTC as required under the Radio Act and the Broadcasting Act. The department has always considered these stations as radio apparatus requiring a licence and in some cases a technical certificate.

The department has not licensed any earth stations used for reception of signals directly from U.S. satellites. Similarly the U.S. has refused to license earth stations for reception of signals direct from Canadian satellites. These policies follow from a 1972 exchange of letters between the two countries, and the international satellite (Intelsat) agreement.

Broadcasting regulation

The department evaluates and certifies the technical and engineering aspects of all broadcast and cable TV applications made to the Canadian Radio-television and Telecommunications Commission, and regulates the technical operations of approved broadcasters.

During 1980/81, the department processed 905 applications for cable TV, 173 for TV, 132 for FM and 77 for AM radio. In accordance with international regulations, it also studied 1,250 broadcast proposals from other countries, most of them from the United States, to ensure that proposed foreign broadcasting stations would not interfere with existing or planned Canadian stations.

The department continued to assist with the CBC accelerated coverage plan aimed at extending TV coverage to rural and remote communities. During the year it evaluated and co-ordinated 23 FM and 44 TV channels.

Revised FM allotment plans for Canada were issued in final form during the year. The revised plans allow for the creation of more stations, in light of increasing demand for FM.

A new UHF-TV allotment plan was also finalized, for a reduced television band in the 470-806 MHz frequency range.

Spectrum management system

In July 1980, national implementation of a computer-assisted spectrum management system was approved, following a pilot trial in 1979/80.

A data base was established for each region, combining information from several sources to create a single record for each radio station. The largest of the existing data bases was absorbed, and collection of licence renewal fees was partly centralized to cover ship, aircraft, amateur and space licences, or 50 per cent of the accounts. In addition, a new data entry form was designed consolidating several forms previously used, and computer hardware and software packages were readied for national implementation.

The department's research sector provided continuing support for the spectrum management system by developing a method for selecting and monitoring sites that will be used during the major national expansion of the system planned for 1981/82.

General Radio Service

During 1980/81, the national computer-based General Radio Service licensing system became fully operational and approximately 222,000 licences were issued.

A new 48-page handbook for users of the General Radio Services was published in April 1980. This expanded guide to the proper use of short-range two-way personal radio includes information on regulations, operating procedures, resolution of interference problems, and a consumer guide to equipment. The handbook was later recorded on tape for the use by the blind.

The department continued its studies towards the development of a new personal radio service at 900 MHz. Meetings were held both with representatives of the Conference of European

Postal and Telecommunications Administrations and with the United States Federal Communications Commission to explore the possibility of worldwide agreement on a common spectrum allocation for such a service, and on the general harmonization of equipment specifications and licensing conditions.

Land mobile

Taking a step towards more efficient management of the land mobile spectrum, the department has been working to improve its capability for monitoring use of the land mobile bands and to improve channel performance and capacity.

During the year, the department also carried out studies of digital transmission in the land mobile service.

Terminal attachment

In co-operation with federally regulated carriers, affected provinces and the equipment supply industry, the department continued to develop technical standards for customer-owned telephone or other terminal equipment to be connected to the networks of federally regulated carriers. Recent efforts have concentrated on devices that dial into the network. In January, the first of these — a provisional standard for telephone sets — was released for public comment.

Progress was made during the year in developing standards for terminals that do not dial into the network, including key telephone systems, private switchboard systems and radio common carrier paging control terminals. The introduction of additional equipment of this type meant that new device definitions and testing methods had to be developed.

As part of the terminal attachment program, the department certifies devices on terminals that meet established standards. In 1980/81, the department tested 135 types of terminal equipment for certification, and continued its audit program involving random selection and testing of certified equipment models to ensure continuing compliance of current production units. Audits were carried out on 12 pieces of terminal equipment.

In addition, the department monitored the use being made of the certification standards by various carriers and provincial regulatory bodies. The department also followed closely current developments in the United States related to the terminal registration program of the U.S. Federal Communications Commission.

Consumer equipment immunity

There are often complaints from consumers about malfunctioning TVs, stereos, tape recorders and other electronic equipment in locations where there are strong radio signals.

As a result of departmental initiatives over the past three years, the Canadian Standards Association has completely reviewed industry requirements for electromagnetic compatibility in an effort to reduce this problem. This review was completed in 1981, and the results were published in the form of a recommended program for writing standards governing electromagnetic interference and electromagnetic compatibility.

GOVERNMENT TELECOMMUNICATIONS

The federal government is the largest user of telecommunications in Canada. Through the Government Telecommunications Agency, the department promotes a concerted approach to telecommunications management by government departments and encourages use of the most cost-effective communications services. The department is concerned that the administration of government telecommunications benefit the economic health of Canadian systems and technology.

The agency provides shared telecommunications for use on a government-wide basis, aggregating the needs of some 50 departments and agencies and leasing services from telecommunications carriers. Costs are allocated to departments according to use.

Shared networks

The agency manages consolidated telephone systems in 20 cities in Canada and two in the United States, as well as an intercity telephone network which connects federal government offices across the country. During 1980/81, average working-day traffic on the intercity network was 108,000 calls, including operator-handled calls. Wide Area Telephone Service (WATS) traffic increased by 14 per cent, to 877 circuits. The latest computerized switching technology was introduced in six consolidations, and automatic systems for recording traffic information were installed in three.

The agency also manages a low-speed, computer-controlled message switching system that moves information to many government offices across Canada. Traffic on this network was up six per cent to 5.1 million messages.

Advising user departments

While departments have primary responsibility for determining and meeting their telecommunications needs, the agency provides consulting services on request on the acquisition or management of telecommunications systems or services. During 1980/81, for example, the agency assisted Revenue Canada in setting up a national INWATS system for Taxpayers' Information Service.

The agency works closely with Treasury Board in preparing material for the **Administrative Policy Manual**. During the year, the **Guide on Telecommunications Administration** was updated and incorporated into the manual, and new guidelines and policies were added on planning, evaluation, monitoring and responsibilities of departmental telecommunications co-ordinators.

In addition, a position profile was developed to define the functions, responsibilities and authorities of telecommunications co-ordinators in the public service.

Annual review of government telecommunications

In November 1980, the department published the fourth **Annual Review of Telecommunications in the Government of Canada**, covering the 1979/80 fiscal year. This document identifies the telecommunications resources used to support government programs, analyses

departmental telecommunications plans and provides direction for long-range planning of federal government communications systems.

Information provided by departments shows that government telecommunications expenditures in 1979/80 totalled $350 million, a real decline in expenditures for the first time since 1976/77 when procedures were instituted to collect this information.

Planning for the future

One of the recommendations put forward in the **Annual Review of Telecommunications** called on the department to take the lead in developing innovative government telecommunications applications.

Office automation has been identified as a principal area for planning, since it offers the greatest potential for improved economy and efficiency. The objectives in this area are to:

- ensure effective use of telecommunications to support departmental operations and enhance the delivery of programs;
- provide capability for information access and sharing within the government and with the public at large; and
- permit the orderly introduction and use of information technology within the federal government.

In line with this recommendation, a communicating word processor network has been established within the department to permit assessment of text messaging services for the federal government. Cost and benefits, technical performance and user attitudes will be evaluated.

On a broader scale, the agency has laid plans to develop a government-wide electronic text communications network service. Planning activities include evaluation of the capability of the government intercity telephone network to support text communications, a preliminary market survey and cost comparisons between the intercity network and equivalent common carrier services linking communicating word processors.

The potential of satellite communica tions is also being explored. Field trials are planned using Anik B to evaluate the use of satellite communications for government programs and services to the public. The trials will involve a number of departments.

Service to the public

To provide easier access by Canadian citizens to government programs and services, the agency is co-ordinating implementation of recommendations involving telecommunications made by the Task Force on Service to the Public. As a result of these initiatives, blue pages listing government services are now included in many public telephone directories. Other elements include development of combined federal-provincial telephone referral services, inclusion in the blue pages of phone numbers for area MPs, planning for toll-free telephone access to MPs' constituency offices and planning for Canada-wide toll-free access to government offices most often contacted by the public, such as passport offices.

REGIONAL OPERATIONS

The department's five regions (Atlantic, Quebec, Ontario, Central and Pacific) have been heavily involved over the years in spectrum management and the administration of government telecommunications. They have now taken on greater responsibility for representing the other interests of the department at the regional level.

A program development and policy analysis group was created in each region to improve program delivery in such areas as satellite communications, research, and arts and culture. The new groups will maintain contacts with provincial government departments, universities, the industrial and cultural communities and the public. In addition, they will be able to identify regional policy issues as they develop, and ensure they are taken into consideration in the formulation of national policies.

Regional staff also provided substantial support to the Federal Cultural Policy Review Committee in distributing background information, responding to public enquiries and providing logistic support for regional public hearings.

Support for the Anik B experiment in direct home reception of satellite broadcast signals has been provided by staff of the Ontario, Central and Pacific regions. They have co-ordinated antenna installation and equipment maintenance and are also involved in program evaluation. In addition the Central Region supplied a technical supervisor to Inuit Tapirisat of Canada's Inuktitut project which is using satellite and television technology to meet the special communications needs of the Inuit.

Regional staff are also playing an important role in the Telidon program, promoting the Canadian videotex system through demonstrations to a variety of audiences ranging from the general public to specialized groups.

In the area of office communications, all the regions are participating in a departmental experiment managed by the Government Telecommunications Agency. The regions are linked together and to headquarters by a network of communicating word processors that allow for the exchange of textual information. The experiment will permit an assessment of service for the federal government.

Staff at the 44 district offices and associated spectrum surveillance centres carry out such functions as licensing, inspection, monitoring and the administration of exams for radio operators' certificates. On behalf of the Ministry of Transport, they also inspect radio installations on board ships and issue certificates of approval.

FEDERAL-PROVINCIAL RELATIONS

At the last federal-provincial conference on communications, held in Toronto in 1979, ministers asked working groups of federal and provincial officials to prepare reports on:

- competition in the telecommunications industry;
- possible delegation to the provinces of regulatory authority over cable television; and
- the impact of communications policy on the equipment manufacturing and program production industries.

At year end, these reports were in preparation for the federal-provincial conference of communications ministers expected to be held in 1981.

Atlantic Consultative Committee on Communications

The committee is an ongoing, formal mechanism for federal-provincial consultation and co-operation to discuss matters of mutual interest to the provinces and the federal government in the Atlantic regions.

In 1980/81, two meetings were held, with discussions ranging over topics such as the rural demand survey, direct broadcasting satellites, university research, Phase II of the Anik B program and CRTC hearings on the extension of services, terminal attachment, TCTS rates and pay-television.

Discussions were undertaken with officials in the three prairie provinces with a view to establishing a similar regional consultative mechanism for the Prairies.

Regulatory Clearing House

The Clearing House and Repository for Telecommunications Decisions began operations in October 1980, making information on telecommunications regulations more accessible to the Canadian public.

Operating under the auspices of the Canadian Law Information Council, the clearing house is receiving financial support from the federal and provincial governments, as well as the communications industry. The department is providing $150,000 over the first three years. The clearing house aims to be self-supporting at the end of this period.

The clearing house collects, indexes and publishes orders and decisions by the 11 federal and provincial bodies with regulatory power over telecommunications matters, thus increasing mutual awareness on the part of the various tribunals. The project evolved from a study carried out in response to a need identified at the 1978 federal-provincial conference of communications ministers.

Culture and historical resources

The ministers responsible for cultural affairs and historic resources held a conference in Toronto in September 1980. Among the issues discussed were: measures to foster Canadian content, international cultural affairs, fiscal incentives for the arts, indemnification of international exhibitions, and the work program leading to the next Ministerial meeting.

These items are now under study by a steering committee of deputy ministers co-chaired by the federal Deputy Minister of Communications and including representation from western Canada, Quebec and the Maritimes.

INTERNATIONAL RELATIONS

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

Through the Department of Communications, Canada participates in the work of some 20 international organizations concerned with the orderly development and use of worldwide telecommunications links, with the promotion of technological co-operation and with improving world-scale regulation of the radio frequency spectrum.

International Telecommunication Union

During 1980/81, Canada continued to play an active role within the International Telecommunication Union (ITU), through participation in the Administrative Council (the Union's governing body), Administrative Radio Conferences, and the International Consultative Committees (CCIs). The ITU is the United Nations specialized agency responsible for telecommunications and the oldest member of the UN family.

Preparations are under way in Canada for the plenipotentiary conference of the ITU which is to take place in Nairobi in October-November 1982. The last such conference took place in Malaga-Torremolinos in 1973. Besides a complete review of the International Telecommunication Convention and elections for senior ITU positions, the emphasis will be on technical co-operation activities.

Recommendations are being prepared by the department in collaboration with other interested departments and agencies such as External Affairs and the Canadian International Development Agency, which, if adopted, should lead to ITU policies which would help close the telecommunications gap between developing and developed countries.

The ITU has scheduled four World Administrative Radio Conferences to take place during the 1980s. These deal with planning of space services, mobile telecommunications, mobile services, and high frequency (shortwave) broadcasting services. In addition, the ITU has scheduled two Regional Administrative Radio Conferences, one on AM broadcasting and the other on broadcasting satellite services.

In preparation for these conferences, the Canadian government has formed interdepartmental committees, chaired by representatives of the department. These committees are working actively on conference proposals to meet future Canadian telecommunications needs. To enhance the consultation process, government/industry working groups have been formed for the first time and public meetings are being held by the various interdepartmental committees to outline the government proposals and to seek input by all those Canadians who care to participate.

AM broadcasting conference

Canada has completed preparations for the important final session of the Region 2 Conference on AM Broadcasting to be held in November 1981. The conference was convened to establish a frequency assignment plan for the 9,000 AM broadcasting stations in the Americas.

In April, Canada announced its support for retention of the current 10 kHz channel spacing between AM stations, since the financial costs and operational disruptions would outweigh any benefits of conversion for this country.

In June, the department released a draft of Canadian proposals to be submitted to the second session of the conference, and invited public comment. Subjects covered in the proposals included channel separation, Canadian requirements for AM broadcasting stations for the period 1983-1987, and the need and technical standards for a possible AM stereo service. Deadline for comments was September 30, 1980.

Mobile telecommunications

Preparations are well underway in Canada for the World Administrative Radio Conference on mobile telecommunications, to be held in March 1982. Decisions made at this conference could improve the safety of commercial shipping and pleasure boating, and affect almost every user of the maritime mobile radio service.

In January 1981, the department published first draft proposals for changes in the international radio regulations dealing with maritime distress and safety. Public comments received by the March 20 deadline will be used in preparation of final Canadian proposals to be put forward to the conference.

Among the draft Canadian proposals are items recommending establishment of a navigational and meteorological warning system; a ship-to-ship navigation safety channel; and a family of radio frequencies (at 4, 6, 8, 12 and 16 MHz) in support of a future global maritime distress and safety system. Other proposals deal with channelling of the high frequency (HF) maritime mobile radiotelephone service.

CCI activities

The International Telegraph and Telephone Consultative Committee (CCITT) and the International Radio Consultative Committee (CCIR) are permanent organizations of the ITU. The CCITT studies technical, operating and tariff questions relating to telegraphy and telephony, while the CCIR studies technical and operating questions relating to radio communications. Both committees issue recommendations on matters within their purview. The basis for this work is provided by a wide range of studies in which governments, private operating agencies, and industrial and scientific organizations participate.

During the year, the department, in collaboration with other government departments and agencies as well as industrial and scientific organizations, participated in the interim meetings of the 1978-82 study cycle of the CCIR in Geneva. Canadian contributions were presented and defended in line with agreed Canadian positions. While the subject areas addressed covered nearly all areas and terrestrial radio communication services, principal concern centred on matters expected to be dealt with at several future Regional or World Administrative Radio conferences.

In addition, the CCIR has established a group to review the organization of its structure and methods of work to make the organization flexible enough to accommodate new services and respond quickly to the needs of countries over the next decade. The department provides the international chairman for this group.

In the CCITT, activity during the year was directed towards the seventh plenary assembly of this organization held in November 1980 in Geneva. As a world leader in advanced communications systems, Canada is one of the major participants in and contributors to the work of the CCITT.

During the first half of the year, the department was deeply involved in the formulation of Canadian positions for the final meetings of the study group for the study cycle 1976-80.

In June, Canada hosted international meetings of two CCITT study groups. The groups reviewed recommendations on world videotex standards to be put forward to the plenary assembly.

During the second half of the year, the department's activities concentrated on the development of Canadian positions on matters to be discussed at the plenary assembly: the organization and working methods of the CCITT, its relationship to other international agencies, its commitment to assisting developing countries, and the work program for the new study period. This activity resulted in recommendations acceptable to Canada being approved by the plenary assembly as international standards.

The new work program for the study cycle 1981-84 reflects a close interdependence of the study groups, necessitating a high degree of co-ordination. A number of study groups are dealing with various aspects of integrated services, digital networks, data communication, and signalling systems. The evolving new services associated with videotex and teletex (such as Telidon), have made it necessary to extend the traditional studies on telegraph services to include these services under a new term — **telematic services.**

International cultural relations

In October, Canada and France reached an agreement to co-operate on research in the field of audio-visual communications. The agreement covers methods for analysing and targeting audiences for broadcast programming, trends in television programming and production, management of innovation and creativity in the audio-visual field and new approaches to the visual display of information. During the year, the department also took part in bilateral cultural discussions with the Federal Republic of Germany and the Netherlands.

In 1978, Canada signed a UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property. In March 1981, the Government of Mexico asked the Canadian government to return two pre-Columbian statuettes illegally exported from Mexico which were being held by Canada Customs in Montreal, the first such request since the convention.

Space

During 1980/81, under its International Space Industry Support Program, the department co-ordinated activities in support of Canadian space industry opportunities in the domestic satellite communications programs of other nations such as Australia, Brazil, Mexico, Colombia, Saudi Arabia and Papua New Guinea, as well as regional systems such as ARABSAT, NORDSAT, AFROSAT, and the Caribbean Regional Communications Service Study. In addition, the department participated in the planning for the NATO SATCOM IV program with a view to promoting subcontracting opportunities for Canadian industry.

The department supported the Department of Industry, Trade and Commerce in its activities to foster the participation of Canadian industry in U.S. military space programs under the umbrella of the Canada/U.S. Defence Production and Development Sharing Arrangements. The department also participated in studies by the Department of National Defence to identify military space programs which might be undertaken co-operatively by Canada and the United States.

As part of a space industry study undertaken by the Department of Industry, Trade and Commerce, the department co-ordinated the preparation of the civil/commercial portion of a space sector market opportunities review 1980-1990. The report of this review was presented in December 1980 to a government/industry seminar on space held under the auspices of the industrial aspects subcommittee of the Interdepartmental Committee on Space.

Computer communications

Canada participated in the OECD Working Party on Information, Computer and Communications Policies (ICCP), and in the High Level Conference held in Paris in October 1980 which was chaired by the Deputy Minister of Communications. Canadian suggestions regarding work in the ICCP were accepted, particularly those related to the work of the expert group on transborder data flow.

Canada was represented at the World Conference on Transborder Data Flow organized by the Intergovernmental Bureau for Informatics (IBI) in June 1980, and was also invited to participate in a group of experts advising the United Nations Centre on Transnational Corporations on their study on transborder data flow.

Conferences

The department, together with other Canadian corporate and institutional members of the International Institute of Communications (IIC), hosted the institute's annual conference in Ottawa in September 1980. Based in London, England, the IIC is an international, non-governmental organization which provides a non-political environment where some of the world's most influential communications experts from government and the private sector can exchange views on communications issues, policies, technologies and services.

Speakers from various parts of the world, especially from developing nations, presented papers to the 350 delegates representing the academic, technical and industrial communities of 68 countries. The agenda included a keynote address on the north-south dialogue between industrialized and developing countries and its implications for communications. The address was delivered by Olof Palme, former premier of Sweden and vice chairman of the Independent Commission on International Development Issues (the "Brandt Commission").

UNESCO

During the year, the department participated in Canadian activities relating to UNESCO's involvement in communications development. An intergovernmental conference was convened by UNESCO in April 1980 in Paris to consider a new mechanism for dealing with the communications needs of developing countries. The conference recommended the establishment of an international program under the aegis of UNESCO, to be co-ordinated by a 35-member intergovernmental council. The recommendation was approved by UNESCO's 21st general conference which took place in Belgrade, Yugoslavia, in September-October 1980 and Canada was elected to the council.

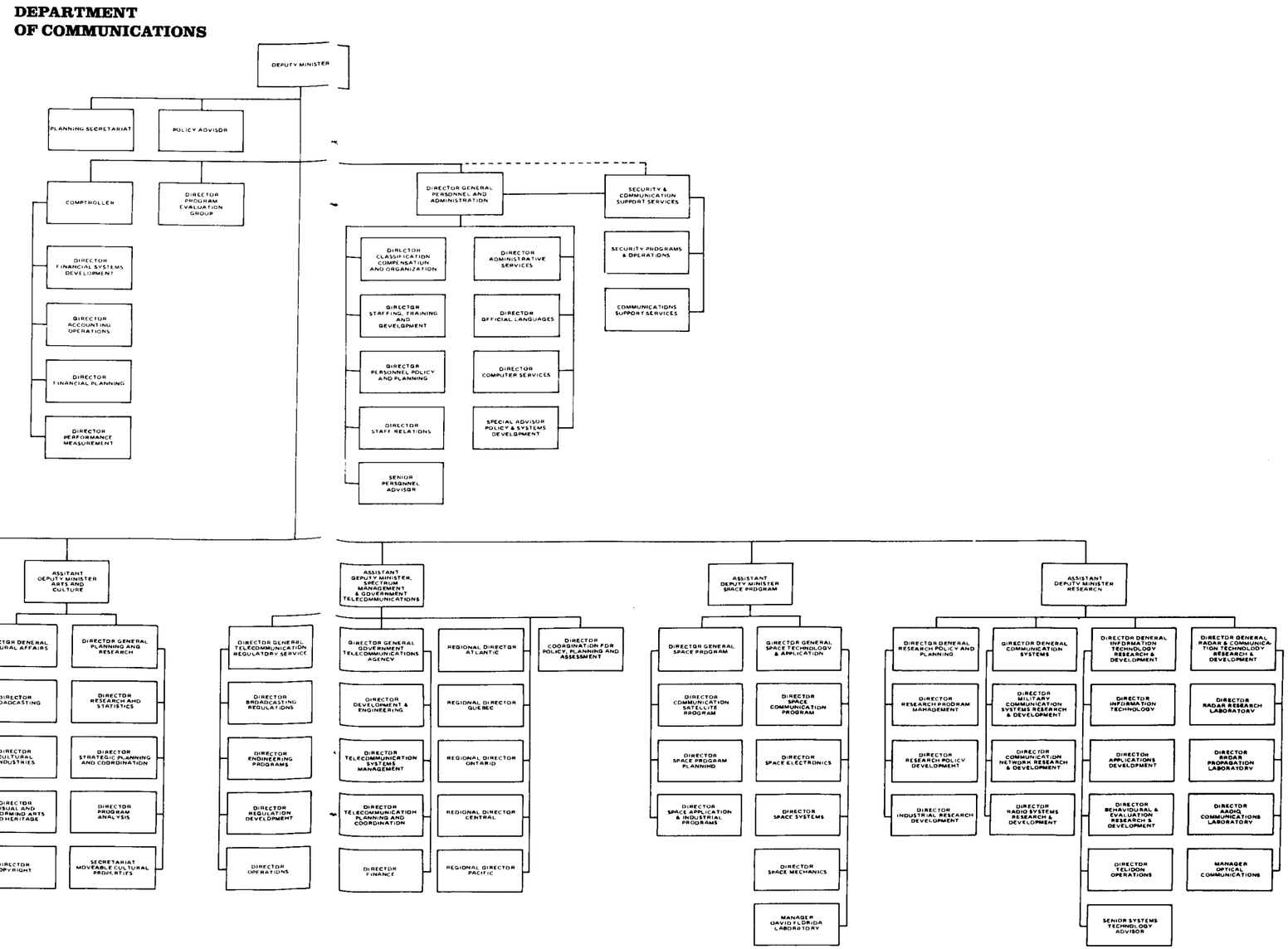
Telecommunications Services Policy Study

In response to a request by CIDA, the department is managing a policy study on the role of telecommunications in the socio-economic development process. Undertaken in May 1979, the study is now nearing completion. The department hopes this study will help to establish the vital link between telecommunications and development.

APPENDICES

APPENDIX I

Organization chart of the Department of Communications



AS OF FEBRUARY 1st, 1981

APPENDIX II

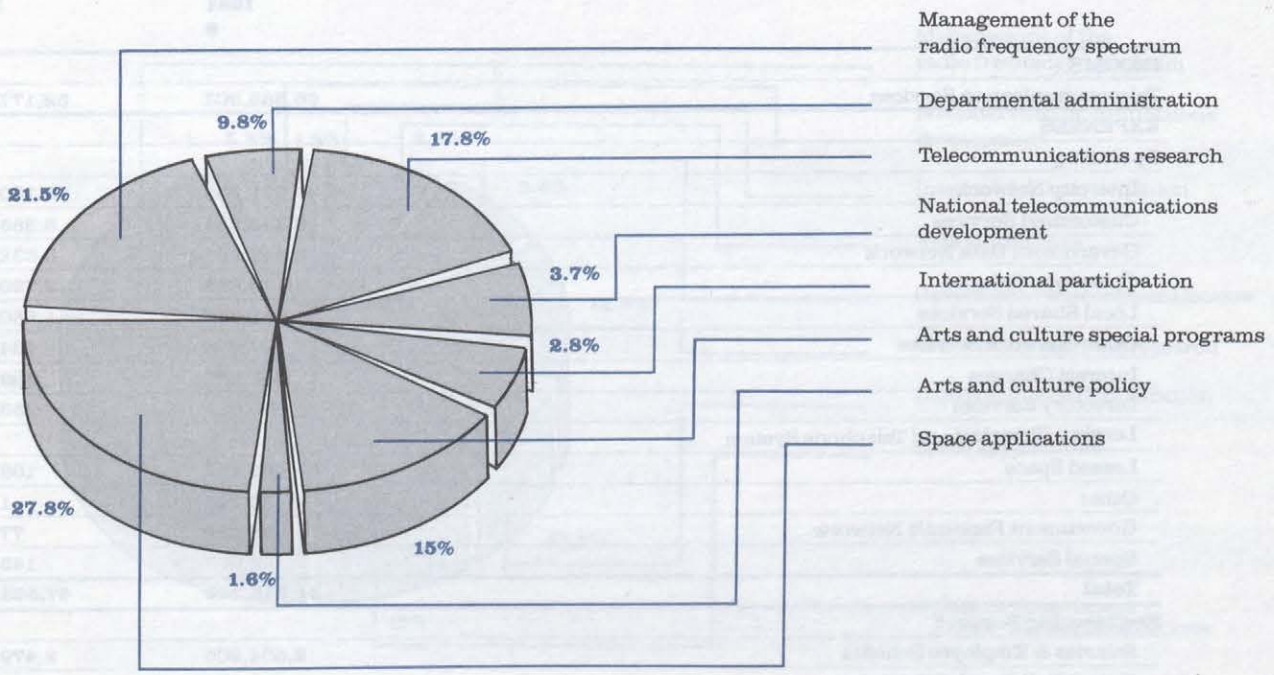
Expenditures by activity 1980/81
(in thousands of dollars)

	Operating	Capital	Grants and contributions	Total
COMMUNICATIONS PROGRAM (excluding the Government Telecommunications Agency)				
Departmental administration	12,440	255		12,695
Telecommunications research	14,834	8,155	25	23,014
National telecommunications development	4,665		243	4,908
International participation	1,063		1,753	2,816
Management of the radio frequency spectrum	26,822	783	227	27,832
Space applications	17,798	7,245	10,820	35,863
Contributions to employee benefit plans	6,257			6,257
	83,879	**16,438**	**13,068**	**113,385**
Less: receipts and revenues credited to the vote	4,096			4,096
	79,783	**16,438**	**13,068**	**109,289**
Less: receipts credited to revenue	23,157			23,157
Add: accommodation provided without charge by this department	2,634			2,634
accommodation provided without charge by Public Works	4,506			4,506
other services provided without charge by other departments	942			942
Total cost of program	**64,708**	**16,438**	**13,068**	**94,214**
ARTS AND CULTURE PROGRAM				
Policy development and analysis	2,180	46		2,226
Special programs	1,663	13	17,849	19,525
Contributions to employee benefit plan	225			225
	4,068	**59**	**17,849**	**21,976**
Less: receipts credited to revenue				
Add: accommodation provided without charge by Public Works	270			270
other services provided without charge by other departments	24			24
program costs associated with publication mailings	146,300			146,300
Total cost of program	**150,662**	**59**	**17,849**	**168,570**
Grand total	**215,370**	**16,497**	**30,917**	**262,784**

 SOURCE: 1980-81 Public Accounts of Canada

APPENDIX III

Operating expenditures by activity 1980/81
(excluding the Government Telecommunications Agency)



 SOURCE: Department of Communications

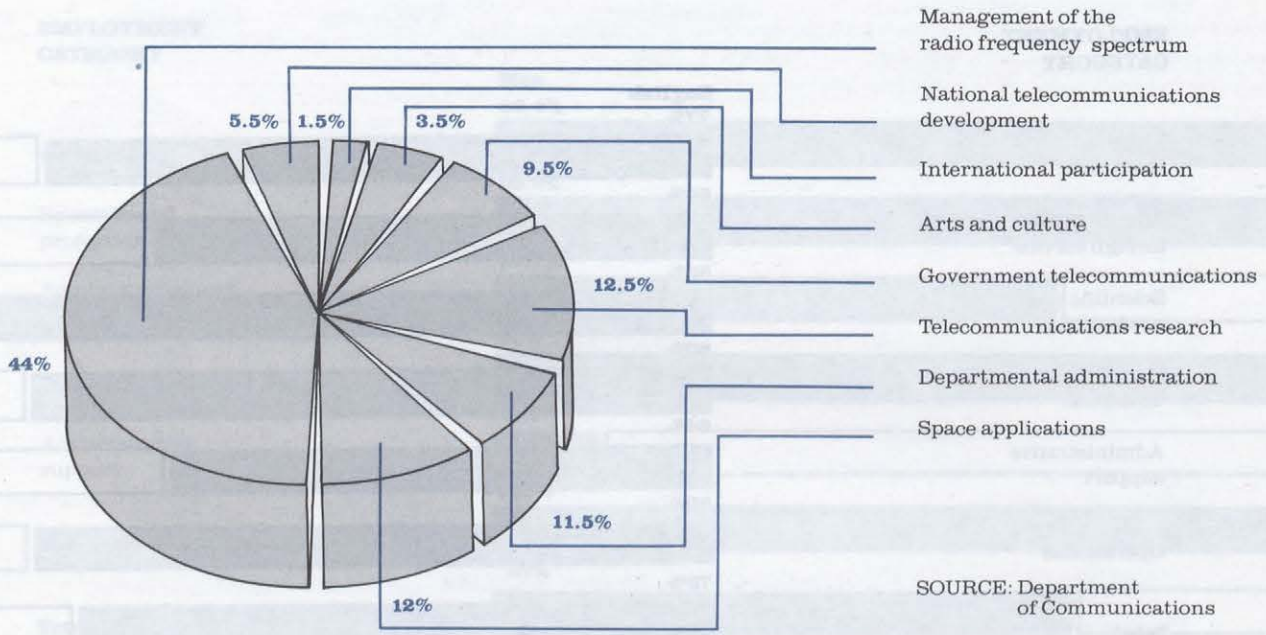
APPENDIX IV

Government Telecommunications Agency revolving fund
Statement of operations and retained earnings
for the year ended March 31, 1981

	1981 $	1980 $
INCOME		
Telecommunication Services	56,583,303	52,177,127
EXPENSES		
Operating		
Intercity Network	32,671,900	30,130,206
Customized Services	8,446,914	8,365,801
Government Data Network	3,849,161	3,632,189
Operators' Salaries	3,175,884	2,720,554
Local Shared Services	1,684,070	1,550,792
Other Network Services	197,435	184,187
Interest Charges	361,230	393,385
Directory Services	330,969	253,274
Leasing Electrical and Telephone System	—	—
Leased Space	122,252	108,856
Other	20,195	1,334
Government Facsimile Network	66,289	77,966
Special Services	92,007	145,222
Total	**51,018,306**	**47,563,766**
Engineering Support		
Salaries & Employee Benefits	2,504,905	2,479,990
Rental Building & Equipment	112,776	124,485
Travel & Removal	88,611	45,716
Telephone & Freight	32,061	25,660
Office Materials & Supplies	9,562	6,814
Professional Services	114,067	34,744
Other	3,618	774
Total	**2,865,600**	**2,718,183**
Administration		
Salaries & Employee Benefits	2,078,799	1,574,097
Rental Building & Equipment	207,878	178,230
Professional Services	126,259	75,229
Telephone & Freight	117,850	78,494
Travel & Removal	65,460	38,707
Office Materials & Supplies	35,087	26,177
Other	28,284	2,217
Depreciation	25,954	19,313
Total	**2,685,571**	**1,992,464**
Total Expenses	**56,569,477**	**52,274,413**
Net Income (loss) before extraordinary item	13,826	(97,286)
Extraordinary item – Loss on disposal of fixed assets	(2,017)	(1,453)
Net Income (loss) after extraordinary item	11,809	(98,739)

APPENDIX V

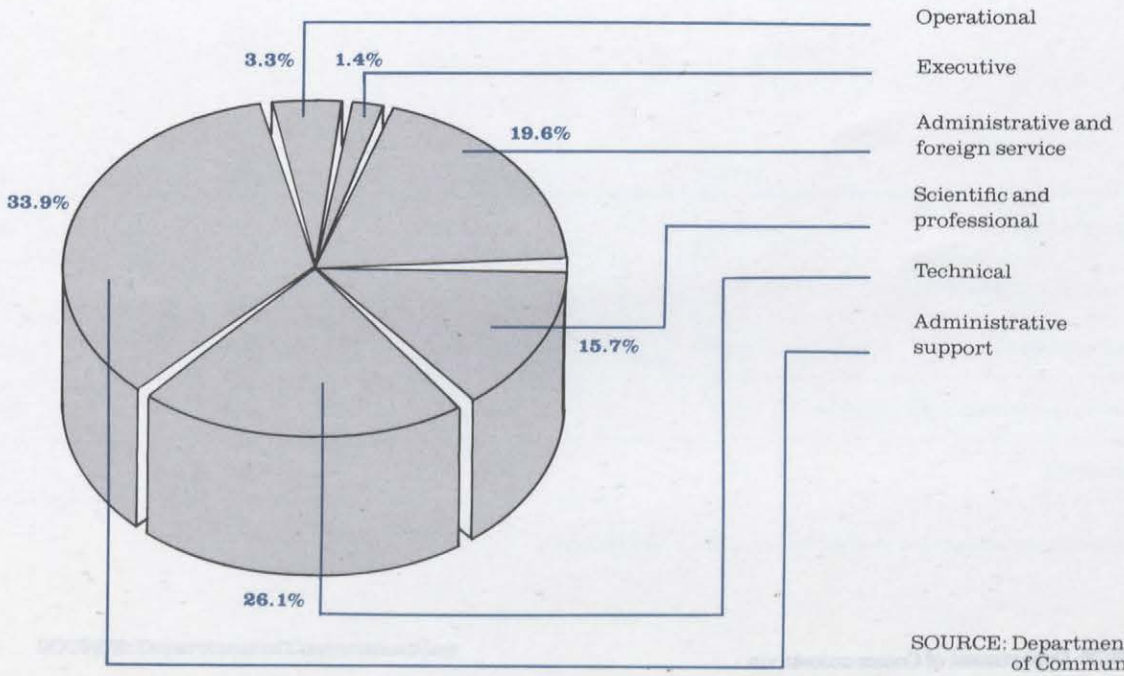
Authorized person-years by activity 1980/81



SOURCE: Department of Communications

APPENDIX VI

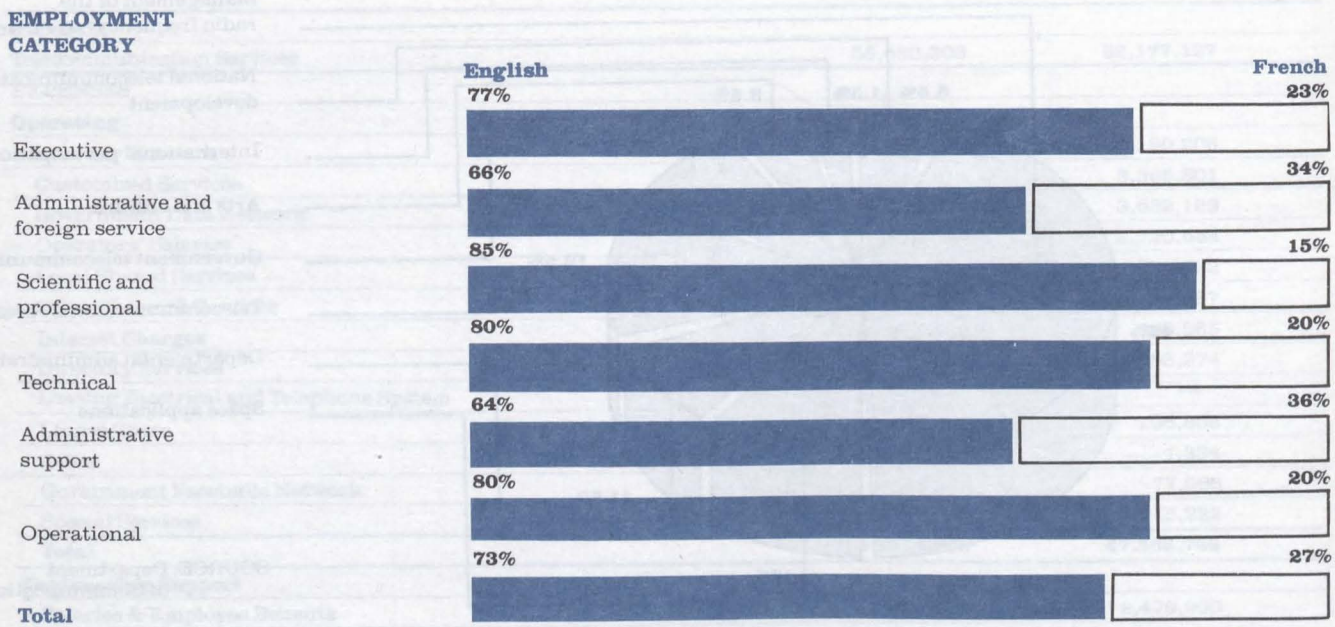
Departmental employees by employment category



SOURCE: Department of Communications

APPENDIX VII

Department employees by employment category and first official language

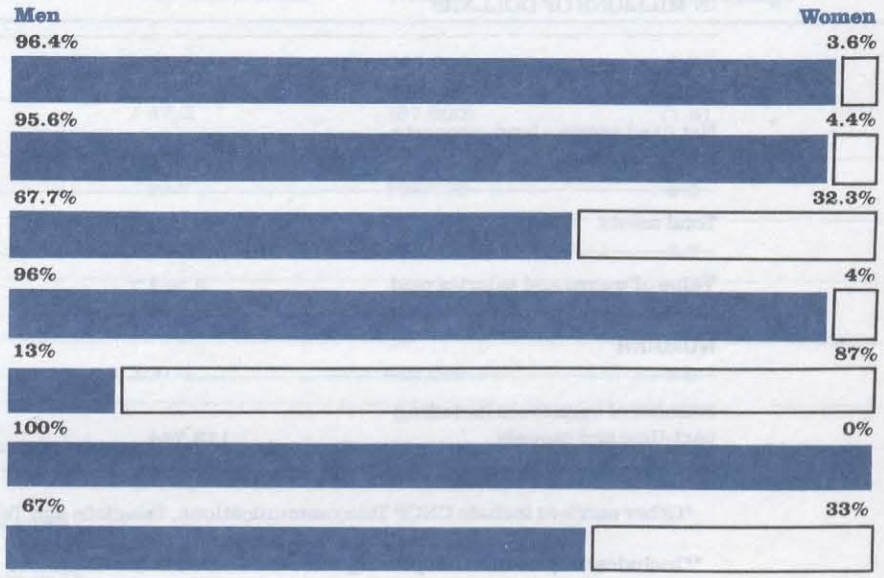


NOTE: Includes indeterminate and term employees as of March 31, 1980.

 SOURCE: Department of Communications

APPENDIX VIII

Departmental employees by employment category and sex



NOTE: Includes indeterminate employees as of December 31, 1980.

 SOURCE: Department of Communications

APPENDIX IX

Canadian telecommunications industry, 1980

	Telephone and other carriers*	Radio and television broadcasting	Cable television**	Total
IN MILLIONS OF DOLLARS				
Total operating revenues	6,254.2	1,063.4***	348.6	7,666.2
Net fixed assets – land, property and equipment	14,478.1	648.8	389.1	15,516.0
Total assets	17,393.1	1,398.0	673.6	19,464.7
Value of wages and salaries paid	2,323.7	665.3	92.0	3,081.0
NUMBER				
Number of employees including part-time and casuals	113,744	28,336	5,396	147,476

*Other carriers include CNCP Telecommunications, Teleglobe and Telesat

**Includes only licensees reporting more than 1,000 subscribers

***Excludes 543 million net cost of CBC operations as covered by Parliamentary grants.

SOURCE: Statistics Canada and Department of Communications

APPENDIX X

Trends in the Canadian telephone industry, 1950-1980*

	1950	1960	1970	1980
Telephone companies	2,912	2,558	1,376	183
Telephones, all types (million)	2.9	5.7	9.8	16.5
Full-time employees	45,396	57,670	68,334	100,059
Local and long-distance calls (billions)	5.0	9.6	15.9	26.8
Calls per capita	362	537	737	1,114

*Fourteen of these companies provide 98 per cent of the services.

SOURCE: Statistics Canada

APPENDIX XI

Canadian households with communications services, May 1980

Type of facility of equipment	Households		Increase (Decrease) over 1979	
	Number	Per cent of total	Number	Percentage
Television*	7,628,000	97.7	240,000	3.2
Colour	6,335,000	81.1	537,000	9.3
Black and white	3,668,000	47.0	(67,000)	(1.8)
Radio (AM and FM)**	7,702,000	98.7	265,000	3.6
Telephones***	7,622,000	97.6	275,000	3.7
Cable television	4,281,000	54.8	365,000	9.3
Total Canadian households	7,807,000	100.0	249,000	3.3

*Because some households have more than one television receiver, the number of households with colour television added to the number with black and white television does not equal households with television receivers.

**Includes households with one receiver or more.

***Includes households with one telephone or more.

 SOURCE: Statistics Canada

APPENDIX XII

Cable television in Canada by region, August 1980

Total systems	Pacific*	Central	Ontario	Quebec	Atlantic	Canada
Systems	70	55	119	151	46	441
Subscribers	773,359	672,032	1,816,547	826,245	251,085	4,339,268
Total households**	896,000	1,318,000	2,910,000	2,046,000	637,000	7,807,000
Percentage of households subscribing	86.3	51.0	62.4	40.4	39.4	55.6
Systems with more than 1,000 subscribers						
Systems	53	39	107	87	38	324
Subscribers	768,692	665,306	1,811,361	800,317	247,362	4,293,038
Households in licensed areas***	872,066	962,560	2,414,345	1,711,549	351,146	6,311,666
Penetration in licensed areas (percentage of households with access to cable)	88.1	69.1	75.0	46.8	70.4	68.0

*Includes British Columbia, the Yukon and Northwest Territories.
**Figures as of May 1980.
***Areas licensed for the distribution of cable television.

APPENDIX XIII

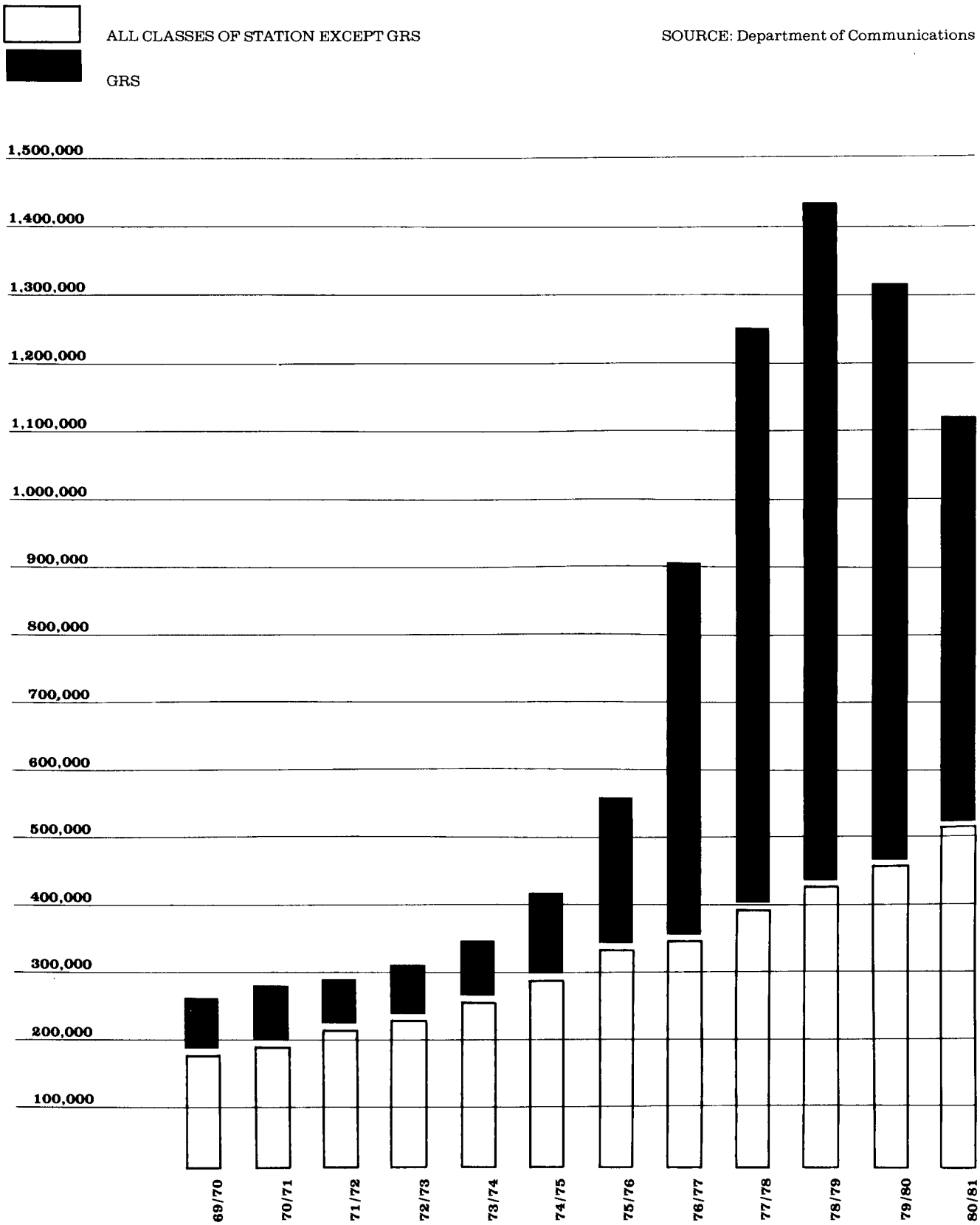
Canadian Broadcasting Stations by Province or Territory

	AM	FM	TV
ALBERTA	87	41	107
BRITISH COLUMBIA	188	55	331
MANITOBA	42	30	57
NEW BRUNSWICK	36	7	26
NEWFOUNDLAND	50	21	118
NOVA SCOTIA	48	14	42
NORTHWEST TERRITORIES	23	12	29
ONTARIO	228	92	113
PRINCE EDWARD ISLAND	5	1	3
QUEBEC	157	65	143
SASKATCHEWAN	28	21	79
YUKON TERRITORY	16	1	17
Total	**908**	**360**	**1065**

 SOURCE: Statistics Canada

APPENDIX XIV

Radio station licences in force from 1969/70 to 1980/81



APPENDIX XV

Radio stations by service category for 1980/81 fiscal year

Service Category*	Number of Stations			
	Ship	Coast	Land	Mobile
Limited maritime mobile		15		
Private maritime mobile		128		
Public commercial			2,418	14
Restricted public commercial			1,518	
Private commercial**			49,475	325,963
Provincial government			8,052	47,992
Municipal			4,622	43,415
Experimental			570	653
Amateur			21,050	
Public commercial receiving			200	1
Private commercial receiving			836	493
Public commercial automatic repeater			1,230	
Private commercial automatic repeater			3,779	
Aircraft navigational				4
Aeronautical mobile			1,969	17,129
Maritime mobile	24,163			

*Statistics shown for each service category indicate the number of stations performing that particular category of service. Note that a licence may show more than one service category.

**Included in this category are 8,340 land and 33,145 mobile stations licensed to federal government departments.

NOTE: Excluded from the above are the following radio stations:
General radio service, 683,094
Earth, 483
Space, 7

SOURCE: Department of Communications

APPENDIX XVI

Acts under which the Minister of Communications has responsibility

The Department of Communications Act
The Telegraphs Act
The Canadian Radio-television and Telecommunications Commission Act
The Teleglobe Canada Act
The National Transportation Act
The Telesat Canada Act
The Radio Act
The Railway Act
The Broadcasting Act
The Canada Council Act
The Canadian Film Development Corporation Act
The Cultural Property Export and Import Act
The Social Sciences and Humanities Research Council Act
The National Arts Centre Act
The National Film Act
The National Library Act
The National Museums of Canada Act
The Public Archives of Canada Act

APPENDIX XVII

Addresses of regional and district offices of the Department of Communications

ATLANTIC REGION

New Brunswick

Regional Office
Department of Communications
7th Floor
Terminal Plaza Building
P.O. Box 5090
1222 Main Street
MONCTON, N.B.
E1C 8R2

District Offices
Department of Communications
Customs House, Room 337
P.O. Box 7285, Stn. A
189 Prince William Street
SAINT JOHN, N.B.
E2L 4S6

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

Department of Communications
P.O. Box 155
159 Main Street
BATHURST, N.B.
E2A 3Z2

Nova Scotia

Department of Communications
2nd Floor
66 Wentworth Street
SYDNEY, N.S.
B1P 6T4

Department of Communications
Gulf Building, 9th Floor
6009 Quinpool Road
HALIFAX, N.S.
B3K 5J7

Prince Edward Island

Department of Communications
Dominion Bldg., 3rd Floor
97 Queen Street
CHARLOTTETOWN, P.E.I.
CIA 7M8

Newfoundland

Department of Communications
Sir Humphrey Gilbert Building
Room 612
P.O. Box 5277
Duckworth Street
ST. JOHN'S, NFLD
A1C 5W1

Department of Communications
Federal Building
P.O. Box 811
CORNER BROOK, NFLD
A2H 6H6

QUEBEC REGION

Regional Office
Department of Communications
20th Floor
2085 Union Street
MONTREAL, Que.
H3A 2C3

District Offices
Department of Communications
Suite 436
2 Place Quebec
QUEBEC, Que.
G1R 2B5

Department of Communications
5th Floor
1650 King Street West
SHERBROOKE, Que.
J1J 2C3

Department of Communications
32 Frédéric Hébert Avenue
NORANDA, Que.
J9X 1T9

Department of Communications
19th Floor
2085 Union Street
MONTREAL, Que.
H3A 2C3

Department of Communications
Public Building – Post Office
P.O. Box 67
TROIS RIVIÈRES, Que.
G9A 5E3

Department of Communications
2nd Floor
942 Chabanel Street
CHICOUTIMI, Que.
G7H 5W2

Department of Communications
701 Laure Blvd., 2nd Floor
SEPT-ILES, Que.
G4R 1X8

Department of Communications
140 West St-Germain Street
RIMOUSKI, Que.
G5L 4B5

ONTARIO REGION

Regional Office
Department of Communications
9th Floor
55 St. Clair Avenue East
TORONTO, Ont.
M4T 1M2

District Offices
Department of Communications
880 Ouellette Street
WINDSOR, Ont.
N9Z 1C7

Department of Communications
30 Duke Street West, 5th Floor
KITCHENER, Ont.
N2H 3W5

Department of Communications
9th Floor
55 St. Clair Avenue East
TORONTO, Ont.
M4T 1M2

Department of Communications
Trebla Bldg., 473 Albert Street
OTTAWA, Ont.
K1R 5B4

Department of Communications
Alexandra Square, Room 210
135 James Street South
HAMILTON, Ont.
L8P 2Z6

Department of Communications
Government of Canada Bldg.,
451 Talbot Street, Room 1112
LONDON, Ont.
N6A 5C9

CENTRAL REGION

Department of Communications
Federal Building, Room 273
Clarence Street
P.O. Box 633
KINGSTON, Ont.
K7L 4X1

Department of Communications
Station Tower, 2nd Floor
421 Bay Street
P.O. Box 727
SAULT STE. MARIE, Ont.
P6A 5N3

Department of Communications
Federal Building, Room 154
100 – 4th Street South
KENORA, Ont.
P9N 1Y6

Department of Communications
Dominion Public Bldg.,
Room 330
33 South Court Street
THUNDER BAY, Ont.
P7B 2W6

North Bay District Office
P.O. Box 596
Suite 301, 222 McIntyre
Street West
NORTH BAY, Ont.
P1B 8J5

Manitoba

Regional Office
Department of Communications
Room 200
386 Broadway Avenue
WINNIPEG, Man.
R3C 3Y9

District Offices
Department of Communications
Room 200
386 Broadway Avenue
WINNIPEG, Man.
R3C 3Y9

Department of Communications
436 Thompson Drive
THOMPSON, Man.
R8N 0C8

Saskatchewan

Department of Communications
206 Circle Drive East
SASKATOON, Sask.
S7K 0T5

Department of Communications
Financial Bldg., Room 101
2101 Scarth Street
REGINA, Sask.
S4P 2H9

Alberta

Department of Communications
10th Floor, Liberty Bldg
10506 Jasper Avenue
EDMONTON, Alta.
T5J 2W9

PACIFIC REGION

Department of Communications
Government of Canada Bldg
820 – 220 – 4th Avenue S.E.
P.O. Box 2905, Station M
CALGARY, Alta.
T2P 2M7

Department of Communications
202 – 11117 – 100th Street
GRANDE PRAIRIE, Alta.
T8V 2N2

Northwest Territories

Department of Communications
P.O. Box 2700
YELLOWKNIFE, N.W.T.
X1A 2R1

Department of Communications
P.O. Box 540
FORT SMITH, N.W.T.
X0E 0P0

British Columbia

Regional Office
Department of Communications
325 Granville Street, Room 300
VANCOUVER, B.C.
V6C 1S5

District Offices
Department of Communications
816 Government Street,
Room 224
VICTORIA, B.C.
V8W 1W9

Department of Communications
Federal Building, Room 304
471 Queensway
KELOWNA, B.C.
V1Y 6S5

Department of Communications
309 – 2nd Avenue West,
Room 584
PRINCE RUPERT, B.C.
V8J 3T1

Department of Communications
3884 – 192nd Street
P.O. Box 3396
LANGLEY, B.C.
V3A 4R7

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

Department of Communications
707 – 299 Victoria Street
PRINCE GEORGE, B.C.
V2L 5B8

Department of Communications
11 – 14th Avenue South
2nd Floor, Room C
CRANBROOK, B.C.
V1C 2W9

Yukon District

Department of Communications
Polaris Building
201 – 4133, 4th Avenue
WHITEHORSE, Y.T.
Y1A 1H8