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Government of Canada
Department of Communications

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Ministère des Communications

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Canada

Department of Communications

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1982/83

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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 1983.

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

Francis Fox,
Minister of Communications

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Introduction

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Throughout the industrialized world, new communications and information technologies are transforming the way we work, the way we conduct our daily lives, and the way we express our cultural interests and values.

Word processors, electronic workstations, high-speed digital switching systems, and ever more powerful computers are transforming the office, where 55 per cent of Canadian workers earn their living.

The effects of new technologies will also be felt in the home. High-powered broadcasting satellites from different countries will soon send out television signals that we will be able to receive directly through small dish antennas. Teleshopping, telebanking and other transactional services may become available on a large scale.

In the cultural sphere, the new technologies are also ushering in an era of great change. By creating new means of distributing cultural products, they are remaking our cultural environment and contributing to the growing demand for information products and cultural works.

Role of the department

Ensuring that the new technologies serve the nation's social, economic and cultural needs, and that all Canadians benefit from the complete range of communications services is the responsibility of the Department of Communications.

The department's mandate includes fostering the orderly development and operation of communications for Canada both domestically and internationally; planning, establishing and managing cost-effective telecommunications facilities and services for federal departments and agencies; formulating and developing policies and programs to meet national artistic and cultural objectives; and promoting inter-agency, inter-departmental and inter-governmental co-operation in the achievement of these objectives.

The department employs 2,300 people, 45 per cent of whom are scientific or technical specialists. One-third of the staff work at the Ottawa headquarters, one-third at the Communications Research Centre just west of Ottawa, and one-third in the 47 regional and district offices.

Diversity is the hallmark of the department's operations, which range from space programs to broadcasting and communications policy, from scientific research to management of the airwaves, and cultural policies and programs.

Total program costs in 1982/83 came to $480.4 million.

Highlights of the year

Two main thrusts marked the department's activities during 1982/83. One was an intensive re-examination of policies affecting broadcasting, and arts and culture in general, while the other involved close co-operation with industry and other sectors of society in the development and application of new technologies.

Broadcasting and cultural policy

Federal cultural policy was the subject of a two-year review conducted by an independent committee under the chairmanship of Louis Applebaum and Jacques Hébert. Set up in 1980, the committee was asked to recommend the directions that federal cultural policy should take in the next 20 years. It presented its report to the government in November 1982.

Some of the committee's recommendations called for basic changes of approach in such areas as heritage and copyright, and for altering the structures and functions of key national cultural agencies.

Among the committee's recommendations, the need for reorganization in broadcasting was the most urgent, because of the unprecedented opportunities presented by new technologies -- opportunities that are important in economic terms but even more important in cultural terms, given the power of broadcasting to shape human values and concerns.

In March 1983, the Government of Canada announced a broadcasting strategy for Canada, presenting a set of policies and proposals to strengthen Canadian broadcasting and make it more competitive. Specific measures giving effect to the strategy included establishment of a Canadian Broadcast Program Development fund, announcement of a Northern Broadcasting Policy supported by special funding for the production of native programming, drafting of regulations to permit individuals and certain commercial establishments to own antennas for the reception of TV signals from satellites without obtaining a radio licence, and launching of a departmental review of the role and performance of the CBC.

While broadcasting services are important, they represent only one aspect of cultural life. Other forms of cultural expression -- the visual and performing arts, writing and publishing, sound recording and film production -- also involve creative elements that must be nurtured and that must have a favourable economic climate in which to grow.

The federal government considers the cultural industries critical, both in their own right and in the context of the larger goal of maintaining Canada as a nation. As a first step towards developing a comprehensive policy framework, the department undertook a major sector-by-sector review of current cultural policies during 1982/83.

In the meantime, the department continued a number of programs that respond to the immediate needs of Canada's artistic and cultural industries — for example, the Special Program of Cultural Initiatives; the Canadian Book Publishing Development Program; the preferential postal rate for books, periodicals and newspapers; and the certification of Canadian film and videotape productions for capital cost allowance under income tax provisions.

New technologies

In the field of information, communications and space technology, the department is working closely with industry in conducting basic research and development, in transferring technology from government laboratories to industry for its use, and in marketing Canadian equipment and services, both nationally and internationally.

These activities are not only creating world-class industries, and jobs for thousands of Canadians; they have also pioneered new technology related to satellites, telecommunications equipment, fibre optics, Telidon and office of the future systems.

In difficult economic times, Canada's technology must be used to full advantage. As businesses and industries are rebuilt and rejuvenated priority must be given to the new technologies and skills that will allow Canada to establish itself firmly in the international marketplace in the future.

Paramount among these is information technology. Our ability to adapt and apply this technology will determine not just our economic well-being as individuals, but our survival as a nation.

The evolution of information technology continues at breakneck speed but the development of applications is a slower process, requiring careful planning.

A case in point is Telidon, the Canadian videotex system that can turn the home TV set into a data terminal, allowing viewers to select electronic pages of text and graphics for display. The department has followed a step-by-step approach in exploring a wide range of applications of this technology, working closely with business, industry and social interest groups. Two funding programs have provided $10.5 million in government money to stimulate this type of public involvement.

New funding of $23 million has been made available to extend the Telidon program for another two years, from this amount the Department of Communications will receive $17 million. The emphasis of the program is to assist Canadian entrepreneurs to establish a strong domestic market for Telidon and to capture a significant share of international markets. The principal objective of the Telidon program is now to help the private sector develop the skills and resources to operate and market commercially viable videotex services.

Another area of dynamic growth is office communications systems, the integrated application of information and communications technology to the full range of office functions that can be automated. The department is supporting the development of Canadian capabilities in this area through the office communications systems (OCS) program. The goal is, in co-operation with the private sector, to create an industry able to supply 40 per cent of the domestic market and 5 per cent of the world market. These market segments represent potential revenues of $21 billion, and the creation of 140,000 jobs. In June 1982, the federal government committed $12 million to this program in the 1982-85 fiscal period to support major industry field trials of Canadian "office of the future" technology in federal government offices.

In the space program, there are several initiatives with significant implications for the growth and international competitiveness of the Canadian space industries.

One is the mobile satellite (MSAT) program, which envisages the use of satellite technology to extend mobile radio and mobile telephone services to rural and remote areas. During the year, the department undertook a $17 million program of engineering and economic studies to develop system concepts and determine the market potential for such a system. These studies will provide the information needed for the government to decide whether or not to proceed with implementation.

Another is Canadian participation in the large satellite (L-SAT) program of the European Space Agency. Canadian industry will supply the solar arrays for L-SAT and will assemble and test the complete spacecraft in the department's David Florida Laboratory. This project will strengthen the ties between Canadian and European industry, and will give Canadian companies the opportunity to participate in future commercial developments resulting from L-SAT.

In addition, the department completed a series of studies on direct broadcasting by satellite (DBS), which would allow people to receive satellite TV signals in their own homes, using small, inexpensive ground stations. In addition to technical matters, the studies program addressed the regulation, policy and institutional aspects of introducing DBS service in Canada.

In all these programs, whether they relate to information and communications technologies or to cultural industries and heritage, the department's approach is predicated on its recognition that the private sector is the driving force in our society, and that the major role of government is to foster a climate favourable to creative activity and economic growth.

Arts and Culture

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The Arts and Culture Sector of the Department of Communications is responsible for the development of federal policies designed to stimulate the creation, production, dissemination and conservation of Canadian cultural products and forms of expression. The policies have two fundamental goals: to foster opportunities for Canadians to express and display their creative ideas and talents, and to promote a stronger sense of national identity.

The sector managed several federal programs and projects supporting arts and culture in Canada. During 1982/83, these included the Special Program of Cultural Initiatives, the Book Publishing Development Program and the Movable Cultural Property Secretariat as well as the postal subsidy, sound recording projects, certification of Canadian film and videotape productions and the activities of the Film Festivals Bureau.

Within the Arts and Culture Sector, the Research and Statistics Directorate supported both policy and program development.

Cultural policy

Federal cultural policy has been undergoing a process of intensive review that will lead to the formulation of new policies to improve the environment for Canadian artistic and cultural expression.

A major contributor to this process was the Federal Cultural Policy Review Committee (the Applebaum-Hébert Committee), set up in 1980 to recommend the directions federal cultural policy should take for the next 20 years.

In its final report, presented to the Government of Canada in November 1982, the committee identified creation, distribution and access as the three main goals to be pursued, with the emphasis on creativity. The committee's recommendations are now being studied by the government.

Following publication of the committee's report, the department launched a major in-house review of its cultural policies. As a result, new policy proposals shall be put forward in the next fiscal year in the fields of film and sound recording. Proposals for crafts and heritage policy will come shortly thereafter. Federal policies in the areas of book and periodical publishing, the performing arts and the visual arts will also be reviewed.

Special Program of Cultural Initiatives

For the past three years, arts and cultural organizations and activities across the country have received financial assistance under the $39.6 million Special Program of Cultural Initiatives.

Through this program, the federal government has helped cultural organizations to reduce their deficits, improve their corporate management, and construct, renovate and upgrade their facilities. Many special cultural activities of national importance have also received funding through this program.

One hundred and sixty grants totalling more than $7.6 million were awarded in 1982/83.

- Ninety-five organizations received $4.5 million in assistance for special projects that drew Canadians from many regions of the country to celebrate and take part in artistic and cultural events. Among the events assisted were the World University Games which took place in Edmonton, the Equity Showcase Theatre staged in Toronto, and the Concours de Musique du Canada held in Montreal.

- Twenty-seven cultural institutions received a total of $2.1 million for capital projects involving construction, renovation or upgrading of the facilities in which professional artists perform or in which Canada's museological and visual arts collections are housed.

- Twenty-three performing arts organizations were awarded grants totalling $647,635 for projects to strengthen their corporate management capability.

- Ten Canadian professional non-profit performing arts organizations and institutions received grants totalling $152,000 to help them retire their accumulated operating deficits and thereby improve their financial stability.

- Five grants representing a total of $35,000 were made to performing arts organizations which did not have deficits.

Cultural industries

Some forms of cultural expression such as book and periodical publishing, film production and sound recording are also industries whose products must compete in the marketplace.

The products of these cultural industries have one feature in common: they are all multiple disseminations of individual acts of creativity and cultural expression. As such, they pervade the consciousness of the population at large, shaping attitudes, tastes and behaviour patterns.

Few businesses are so intimately interwoven with the national fabric as these industries which provide the essential links among cultural creators, producers, distributors and consumers.

Through a variety of programs and through ongoing policy development, the department is striving to ensure a strong sense of Canada's national identity by:

- making Canadian cultural products more accessible to Canadians through the development and promotion of Canadian-owned and -controlled cultural industries;
- enhancing the creativity of Canadians in these cultural industries;
- developing new Canadian talent; and
- increasing the Canadian share of the market at home and abroad.

Book publishing

Financial assistance of $7.6 million was made available to Canadian book publishers during 1982/83 through the Canadian Book Publishing Development Program. This program encourages Canadian publishers to increase their share of Canadian and foreign markets. By strengthening the economic base of the industry, the government is determined to make Canadian publishers -- who produce the vast majority of Canadian-authored books -- the dominant force in our domestic market.

The financial assistance was distributed as follows: $2.1 million in incentives for the publication of Canadian textbooks; $4.3 million in incentives for books intended for general readership (trade books); and $1.2 million for company projects and other initiatives such as training and management development activities to benefit the industry as a whole.

Projects that received assistance under the program included the implementation of the Book Industry Freight Consolidation Plan and a study on the readership and acquisition of English-language trade books in Canada.

During the year, the government decided to extend the suspension of the duty on books imported from the United States for an indefinite period. This decision followed a study of the impact of this measure on book publishers and exclusive agents which concluded that zero-rating had no adverse impact on the Canadian trade. A temporary suspension of the duty had been in effect since 1979.

Periodicals and postal rates

For the year 1982/83, the department was to contribute $220 million to the Canada Post Corporation (CPC) to underwrite the preferential postal rates program available to libraries and publishers of newspapers, periodicals and books. Following protracted negotiations between the department and CPC, Cabinet abolished the postal agreement that had been in force since 1978 and established a new postal subsidy arrangement. As a result, the department's contribution to the difference between the regular and preferential rates was reduced to $50 million for the fiscal year.

New rate proposals shall be developed in 1983/84 when the federal anti-inflation program comes to an end. At the same time, negotiations will take place with CPC with a view to establishing procedures and mechanisms relating to the formulation of rate proposals.

A study of the periodicals industry commissioned by the department was officially launched in November 1982. Woods Gordon, the consulting firm retained for this study, shall submit its final report at the end of the next fiscal year. The results and recommendations of the study will be crucial to the development of policies and programs relating to periodicals, a responsibility of this sector of the department.

In 1982/83, the department commissioned and received two research reports on the use of the book rate by publishing houses and libraries. These documents are available to the public and may be consulted at the departmental library. The sector will study the policy options that may result from these two studies and plans to integrate them into the department's book policy. It will also continue to study the question of postal reclassification.

Sound recording

A study of the French-language export markets for Canadian sound recordings has just been completed and several important issues facing Canada's French producers and recording artists have been identified. This work will complement the earlier major departmental research study undertaken in 1981 on Canada's sound recording industry and will enable the federal government to respond to the needs and opportunities facing this industry at home and abroad through its current policy development work.

Several projects were initiated jointly with the industry in order to assist it to adapt to the changing technological environment in the home entertainment sector. Through the Special Program of Cultural Initiatives, the CIRPA/ADISQ Foundation was given a grant to enable previous research and development on a computerized music data base to be put into commercial application. Also a project jointly funded by this department and the Department of Supply and Services will support the development of a home delivery system for digitally encoded music from a data base using McLeyvier and Telidon technology.

One of the major changes taking place in the industry is the availability of digitally encoded music in the form of compact discs. The Minister and officials of the department have facilitated discussions between Canadian and foreign interests to evaluate Canada as a potential manufacturing site for this technology.

Another major change reshaping the recording industry is the growing use of video to promote artists and the development of music video products as alternatives to long-playing albums. The department is exploring the implications of this development and other emerging home entertainment factors that will affect Canada's cultural and economic development in the sound recording sector.

Films and video

The Canadian feature-film and video production industries have unprecedented opportunities before them, as new technologies generate enormous demand for original programming material. The Canadian pay-TV system, for example, adds a new dimension to the domestic market but the resources available from the pay-TV licensees alone are insufficient to finance the quality of Canadian production they require. Thus the production industry must find innovative ways of meeting this new market demand in a viable way.

In this context, the department began work during the past fiscal year on a national film and video strategy. A mixed public and private sector task force was established which examined the distribution, marketing and exhibition of films in Canada and delivered its report to the Minister in February 1983.

An examination of current incentives available to the film industry was commissioned from a firm of economic analysts as background for this policy development activity. The study describes current impediments to a successful Canadian film industry and proposes a package of incentives to deal with these problems.

One of the ways the federal government currently supports the Canadian film industry is by allowing investors a 100 per cent capital-cost allowance for income tax purposes on certified Canadian films and videotape productions.

In the June 1982 budget, this provision was modified to permit tax write-offs over a two-year instead of a one-year period. The change was to take effect in the 1983 taxation year, giving the industry a transitional period to make adjustments in long-term financing plans.

To qualify for the capital cost allowance, productions must be certified as Canadian. During the calendar year 1982, the Department of Communications certified 68 features with a production value of $27.6 million and 316 shorts with a production value of $27.9 million.

The certification criteria are intended to promote Canadian participation in and control of all aspects of production. The number and percentage of Canadians used in key creative positions on feature productions certified in 1982 averaged 87.9 per cent.

Canadians in Key Creative Positions

Key creative personnel	Total number	Canadians	Percentage
Directors	54	50	92.6
Screenwriters	29	24	82.8
Music composers	14	12	85.7
Art directors	15	14	92.7
Picture editors	66	64	97.0
Directors of photography	78	76	97.4
Highest-paid actor/actress	18	11	61.1
Second highest-paid actor/actress	17	16	94.1

A cost-recovery system was instituted during the year for services provided in relation to certification. The fees are based on a percentage of the production budget.

Two publications were prepared by the Certification Office: a brochure containing guidelines on the 100 per cent capital cost allowance program and an index of Canadian films produced between 1970 and 1982 which run 60 minutes or longer.

The marketing efforts of the film industry are supported by the department's Film Festivals Bureau which co-ordinates the participation of Canadian films in international film festivals and exhibitions.

In 1982/83, through the efforts of the bureau, more than 1,868 Canadian films were submitted to 167 festivals; 1,177 of these entries were selected for showing. While not all the festivals were competitive, Canadian films took 230 awards in 1982/83.

In co-operation with other government departments and agencies, the bureau helped to organize 27 prestige events abroad at which 103 Canadian feature films and 66 short films were presented. Of special note was a month-long "Retrospective of Canadian Cinema" held in Berlin in January 1983.

At the Cannes, Manila and Berlin film festivals -- events attended by important film makers -- the bureau set up information stands to promote Canadian films. It also published a Directory of the Canadian Film Industry and a bilingual catalogue of information sheets on Canadian feature films produced in 1982. Both of these publications were given world-wide distribution.

Within Canada, 15 film festivals were assisted by grants from the department totalling $350,000. The department also made a special one-time contribution of $125,000 to the Canadian Film Institute to help reduce its deficit.

Copyright

Bringing current copyright legislation up to date is of central importance to federal communications and cultural policy, particularly as it relates to broadcasting and to film, videotape and sound recording.

During 1982/83, the department worked in close co-operation with the Department of Consumer and Corporate Affairs in preparing proposals for revisions to the legislation for submission to Cabinet.

The existing Copyright Act came into force in 1924. Although it has been amended several times, it has never been revised to reflect contemporary cultural conditions or technological developments.

The revised legislation must provide adequate legal protection and fair economic returns to creators and intermediaries while ensuring reasonable access to the products of creativity.

Cultural agencies

Among its many activities, the Arts and Culture Sector of the department advises the Minister on major issues relating to the cultural agencies for which he is responsible: the Canada Council, the Canadian Film Development Corporation, the National Film Board of Canada, the National Library of Canada, Public Archives Canada, the National Museums of Canada, the National Arts Centre and the Social Sciences and Humanities Research Council of Canada.

The department also promotes co-ordination and co-operation among these agencies in the interests of coherent federal policy.

During the year, the government announced its decision to build new homes for the National Museum of Man, the National Gallery and the National Aviation Collection. A total of $204.8 million has been committed for these three projects.

To oversee construction of the new buildings for the National Gallery and the Museum of Man, the government established a new agency, the Canada Museums Construction Corporation. In June 1982, Dr. Jean Sutherland Boggs, director of the National Gallery from 1966 to 1976, was appointed Chairman and Chief Executive Officer of the new corporation.

Sites for these two buildings were announced in February 1983. The new National Gallery is to be built on land adjacent to Nepean Point in Ottawa near Parliament Hill, while the new National Museum of Man will be located in Parc Laurier, just across the Ottawa River in Hull.

Performing and visual arts

Financial assistance is provided by the department to two organizations that represent the interests of the visual and performing arts at the national level. Sustaining grants were made during 1982/83 to the Canadian Conference of the Arts in the amount of $524,000 and to the Canadian Crafts Council in the amount of $86,000.

A grant of $985,000 was also made to help maintain the Confederation Centre for the Arts in Charlottetown as a national memorial. The annual federal grant is calculated on the basis of four cents for each Canadian.

In the area of fine arts and crafts, the department focussed its attention during the year on specific problems relating to promotion, marketing, artistic development, the impact of new technology, taxes, health, and export opportunities.

The department also funded the first National Crafts Conference, at which the Minister was the keynote speaker. This conference was set up as a way of improving communication between artists and artisans from all parts of the country.

New programs are being planned to assist craftsmen, designers and those in the fine arts to enhance their skills and expand their markets. These programs would have economic as well as cultural benefits, stimulating the creation of jobs and the development of new products.

Movable Cultural Property

To further its objectives in the field of heritage preservation, the Government of Canada, in 1977, proclaimed the Cultural Property Export and Import Act. The Act is administered jointly by the Minister of Communications and the Canadian Cultural Property Export Review Board. Its purpose is to preserve, in Canada, the best examples of the cultural property which forms the country's heritage. Included are fine art objects, decorative art, ethnographic objects, historical artifacts of various kinds, books and archival material, mineral and fossil specimens. The major provisions of the Act are:

- the establishment of a control system which can delay the export of important cultural objects until Canadian institutions have had the opportunity to buy them.

- the availability of grants or loans to assist designated institutions to purchase a cultural property when its export has been delayed or when it is located outside Canada and available for repatriation. ("Designated" institutions are those which have satisfied the Minister that they meet certain criteria such as public ownership and curatorial capability.)

- the enactment of tax incentives to encourage the donation or sale of cultural objects to designated Canadian institutions.

- the implementation in Canada of the 1970 UNESCO Convention whereby cultural objects illegally exported from any signatory country become illegal imports to other signatory countries.

In 1982/83, 116 applications for cultural property export permits were submitted. Most of the permits were issued by permit officers, either on their own authority or on the advice of expert examiners. Twelve permits were refused on the advice of expert examiners and nine of the objects involved were retained in Canada.

Three cultural property grants totalling over $950,000 were approved by the Minister in 1982/83 to assist designated institutions in purchasing cultural property for which export permits has been refused. Another 48 grants totalling $1.2 million assisted institutions in purchasing cultural property located outside Canada but related to the national heritage.

The tax incentives provided under the Cultural Property Export and Import Act resulted in the transfer of over $21 million worth of cultural property to designated institutions in Canada in 1982/83. The objects involved were mainly fine art but also included archival collections, decorative art and ethnographic objects. Some military, scientific and technological objects were also certified.

In 1981, Nigeria, a signatory to the 1970 UNESCO Convention, requested the return from Canada of a Nok terra-cotta sculpture. Court proceedings were instituted with several hearings taking place in 1982/83. The matter was not concluded at the end of the fiscal year.

A review of the Cultural Property export and Import Act was completed in 1982/83. It indicated that the objectives of the Act were generally being accomplished, although there was a need for more information about the legislation in many sectors. In an effort to overcome this problem, the members of the Movable Cultural Property Secretariat gave numerous briefings across the country and prepared and distributed posters, as well as several brochures and other documents.

Cultural research and statistics

The department conducts an extensive program of cultural research in support of its role in the formulation of cultural policy.

Research ranges from in-depth economic, sociological and statistical studies of specific cultural sectors, industries and occupations to multi-disciplinary reviews of artistic and cultural activities.

A large portion of this research is contracted out. Among the subjects dealt with in consultants' studies completed during 1982/83 were periodical publishing, the Canadian sound recording industry and incentives for the Canadian film industry.

Several major cultural research reports commissioned by the department were completed during 1982/83.

- Simply Dance examines the current economic status of professional dance in Canada and presents a summary of marketing recommendations.

- A survey entitled Employment of Cultural Executives provides information about the working conditions of arts and culture administrators.

- A major study entitled Excise Tax for the Artist describes how the artist could benefit through exemptions from the federal sales tax and points out that the artist can now be considered as a small manufacturer for tax purposes.

- Canadian Freelance Writers: Characteristics and Issues was a re-analysis of the 1979 survey of freelance writers and guilds, it yields a wealth of information on writers' economic circumstances, careers, and social demographic characteristics.

- Also completed were a report on cultural issues and attitudes in Canada entitled Culture in Canada Today: Issues and Attitudes, and an analysis of culture facilities in Canada entitled Culture Facilities: Oversupply or Undersupply.

The department's own research activities are directed to the development of research techniques and the maintenance of basic statistical data which can be used in programs encouraging cultural participation.

A time-use survey conducted in 1981/82 was aimed at this objective. Four reports based on this survey were completed in 1982/83: Marking Time, The Time of Our Lives, Time and Time Again, and The Work of Canadians. These are to be published by Canada Employment and Immigration.

The department also conducted a study on corporate donations to the arts and found that 15,000 corporations donated some $171 million in 1979. This amount represented about half of one per cent of their taxable income.

In addition to its own cultural research, the department has been working with Statistics Canada for several years to develop a national program for the collection of cultural data.

To improve this program, project teams were organized in 1982/83 to focus on specific fields of cultural activity including museums, libraries, heritage matters, book and periodical publishing, and performing and visual arts. These teams are preparing one-year and five-year research plans.

Telecommunications Research and Development

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Through the work of scientists and technicians at its Communications Research Centre (CRC) west of Ottawa, the department has produced significant innovations in such technologies as videotex, fibre optics, satellites and radio communications.

The importance of technological leadership in today's fast-changing world cannot be overemphasized. Not only does it create and sustain industrial employment and export opportunities in the present, but it provides the foundation for future industrial strength.

This is one reason why the government is so active in and so committed to its technology transfer programs. The Department of Communications has systematically transferred new developments from its laboratories to Canadian industry where they result in new products, high-technology employment and export potential. The many successful transfers of communications technology could not have been achieved without the close and continuing co-operation with industry that the government has nurtured and encouraged.

Telidon

A prime example of technology transfer through government-industry co-operation is provided by Telidon, the Canadian videotex system.

Since developing Telidon in its laboratories, the department has invested $45 million to establish the Canadian system as a national and international standard for videotex and to support the development of a Canadian videotex industry. Private sector investment in Telidon during the same period has been more than $200 million.

These investments by government and industry are paying off. More than 1,400 jobs have been created, and hundreds of companies and organizations are now participating in the Canadian videotex industry.

In February 1983, the government announced that it had allocated a further $23 million to extend its Telidon program for two years. The Department of Communications received $17 million of this amount. The purpose of the new funding is to assist Canadian entrepreneurs in establishing a strong domestic market for Telidon products and services, and to help them capture a significant share of international markets.

Incentive funding has been provided through two programs to stimulate the development of the videotex industry in Canada.

Under the $9.5 million Telidon Industry Investment Stimulation Program, the department has helped Canadian companies create new interactive information services that will make Telidon an established medium in Canada. Most of the 52 approved projects started during the year under review.

Twelve non-profit organizations also received financial assistance from the department. The Telidon Public Initiatives Program has provided $1 million in funding to support the development of innovative Telidon services ranging from consumer ratings of automobiles to native-language information services and legal advice for women.

Meanwhile, the department is continuing its efforts to secure Telidon's position as a world standard. Two major achievements in the area of standards were recorded in 1982/83.

First, the Canadian Standards Association and the American National Standards Institute announced, in June 1982, their joint agreement toward a common North American standard for videotex. Known as the North American Presentation-Level Protocol Syntax (NAPLPS), this is based largely on the original Telidon coding scheme. Second, in October 1982, essentially the same standard was given preliminary approval by the Electronics Industries Association for North American Broadcast and Teletext Systems (NABTS).

Since then, the Minister of Communications has urged supporters of the world's major competing videotex systems to combine their efforts to create a new global super-standard that would allow the contents of videotex data bases in different countries to be accessed by all users.

The newly-formed Broadcast Telidon R&D group provided support for preliminary teletext tests by the CBC and other broadcasters by supplying teletext encoders to transmit test signals over various television channels, and teletext measurement equipment to determine the number of errors occurring in the reception of teletext signals at various sites. The tests confirmed the feasibility of carrying out field trials of teletext (broadcast Telidon).

The Broadcast Telidon group also provided technical support to the Canadian Caption Development Agency on the specification of equipment to be developed through industrial contracts for creating and encoding captions.

Office communications systems

Government concern about the growing trade deficit in office equipment and services during the late 1970s led to the establishment of the office communications systems program in 1980. The purpose of this program is to help Canadian companies develop the industrial capacity to supply national and international markets for integrated electronic office systems.

The first phase of the program, completed in early 1982, confirmed the desirability of proceeding with the second phase.

Phase two was approved in June 1982. It involves spending of $12 million in the 1982-85 fiscal period to support major industry field trials of Canadian "office of the future" technology in federal government offices.

Field testing began in 1983 with the inauguration of trials in four departments:

Department	Supplier
Revenue Canada (Customs and Excise)	Bell Northern Research
Environment Canada	Office
National Defence	OCRA Communications Inc.
Energy, Mines and Resources	Systemhouse
	Officesmiths

The first three departments are testing integrated office systems while the fourth is testing an electronic filing cabinet to give access to an estimated 20,000 pages of administrative policies and procedures.

Hundreds of public servants at all levels will be involved in the trials, which will allow Canadian companies to test new equipment and services in a working environment and to demonstrate proven products to buyers.

The trials will also permit researchers to study the implications of information technology in a human context -- for example, the impact on working conditions, employment patterns, productivity, worker health and individual privacy.

Information technology

Telidon videotex/teletext services and office communications systems are just two examples of sophisticated techniques applied to the handling of information. Fundamental to such applications is the R&D in information technology and systems performed by the department through its Communications Research Centre.

During 1982/83, the department continued its work in state-of-the-art, interactive, image communication systems and in advanced sound- and image-processing techniques that could be exploited in Canadian products and services.

Enhancements of Telidon-based systems to provide speech, music and sound effects as compliments to textual and graphical images can lead to new applications and increase the use of Canadian products and services. At Videotex'82, (Toronto, June 1982) the first "sound on Telidon" was demonstrated, the first public presentation of the work done at the CRC.

A number of image compression techniques were explored for efficient storage and transmission of photographic data via Telidon and an advanced PhotoTelidon decoder was designed and demonstrated. Researchers also continued their work on automatic conversion of image data to NAPLPS-compatible graphics code.

Contributions were also made in the area of broadcast Telidon through the development of codes with error-correction capability.

Finally, significant progress was made toward achieving a Canadian VLSI-based Telidon product capability through a contract with Norpak Corporation to develop VLSI chips suitable to use in the next generation of NAPLPS- and NABTS-compatible videotex and teletext products.

Behavioural research

Behavioural research is becoming an increasingly important contributory element to the department's overall research and development program. One purpose of such an activity is to ensure that the design of devices and services addresses the needs and abilities of users.

During the year, the main focus of behavioural research was on Telidon and on office communications systems. Some work was also carried out in support of the MSAT and the Direct Broadcast Satellite projects.

In the case of Telidon, work progressed on aspects relating to the control of information-provider systems through voice input and output. Further work was done on the design of the search structure for Telidon data bases and the use of graphics in presenting content so that users can easily find, comprehend and use such information. A summary of good practice in the design of computer-aided learning (CAL) courseware was prepared and should assist those planning Telidon-based courses.

A review of the experience of the Telidon field trial users and information providers was completed. It gives an overall picture of the state of the Telidon trials as of the end of 1982 and also makes some recommendations for future development.

For the office communications systems program, work progressed on several behavioural issues. A report was drafted for publication in 1983/84 on the preparation of documentation to accompany new terminal devices and suggesting ways of improving the documentation to make it easier for users to learn how to use new systems. Other behavioural research reports in preparation focus on the social impact of office automation, the implementation of a technical system and the nature of organizational change resulting from office automation.

Radio systems

Radio systems research has been an activity of the Department of Communications since 1969, when it was created. Recently, however, the department has concentrated its radio systems R&D in the area of high frequency (HF) radio, with the aim of developing highly reliable systems capable of providing inexpensive long-range communications.

One such development is the RACE system (Radiotelephone with Automatic Channel Evaluation). This HF radio telephone system developed by engineers of the Communications Research Centre can be operated as part of the switched telephone network.

Transfer of RACE system technology to Canadian Marconi, partially funded by NRC's PILP program, resulted in production of prototype units during the year which were used in several field trials. Work is now underway to extend the capabilities of the system into areas such as shipboard stations.

Another development project, jointly funded by the Department of Communications and the Department of Fisheries and Oceans, produced a simple-to-use, low-cost data terminal for use with HF radio. The new terminal could substantially improve ship-to-ship and ship-to-shore radiocommunications, allowing transmission of data messages when radio conditions do not allow intelligible voice communications. Six experimental versions have been tested extensively in actual HF circuits ranging from 50 km to 2,200 km in length. In thousands of messages printed during long-distance testing, no transmission errors were found in the received message, even under adverse conditions. A Canadian company will be selected next fiscal year to manufacture this system under a transfer of technology arrangement.

Increasing the performance of HF modems is another current priority. The main areas under investigation involve the application of recent microprocessor technology to the problem of improving the reliability of HF data transmission.

SHARP project

In a project known as Stationary High Altitude Relay Platform (SHARP), the department is investigating the feasibility of using unmanned aircraft powered by microwave to relay telecommunications signals.

The SHARP vehicle would fly in a circle at an altitude of about 20 km, providing coverage of an area up to 500 km in radius. Using a special antenna fitted on the lower surface of its wings, it would collect microwave power focussed on the circling airplane by a large antenna system and transmitter on the ground.

During 1982/83, the concept of providing power in this way was successfully tested on a small airship flying at an altitude of 20 m. More detailed plans and preliminary cost estimates are being developed for an operational SHARP platform suitable for telecommunications missions.

Demonstrations of low-level flight with scaled-down microwave-powered SHARP aircraft of various types are planned for the next phase of the project in 1984/85.

Communications networks

The fibre optics field trial in Elie, Manitoba, came to a conclusion during the year, having demonstrated that a fibre optics system could be installed, maintained and operated in Canada's rural environment without major difficulty.

The project assisted Northern Telecom, the prime contractor, in developing its product line of fibre-optics components. It also greatly assisted Infomart and the Manitoba Telephone System in establishing the commercial Telidon service, Grassroots.

In the field of computer communications, a computer laboratory was set up so the department could develop methods for validating computer protocols. This laboratory is intended to link up internationally with similar facilities in the United States, the United Kingdom and France.

A new television technology, high definition television (HDTV), is currently attracting the attention of communications planners and researchers. Their goal is to create video systems with an image quality equal to or better than 35 mm motion picture film. Potential uses include business, medical, engineering, educational and scientific applications as well as broadcasting.

In co-operation with the CBC and other interested organizations, the department sponsored an international colloquium on HDTV. Among the recommendations that emerged on the strategy which Canada should adopt towards application of this new technology was the establishment of a Canadian HDTV task force.

The department continues to play a prominent role in the area of communication and computer protocol standards, both nationally and internationally. Forums for such activities include the Canadian Standards Association, the American National Standards Institute, the Electronics Industries Association and the ITU's international consultative committees, the CCITT and the CCIR.

During the year, the department contributed significantly to the development of international standards for office systems and teletex and to the development of the transport layer protocol for open systems interconnection.

Spectrum research

The department's spectrum research is carried out to assist planners and designers of radio systems in making maximum use of the radio frequency spectrum. It also explores the potential of those portions of the spectrum not currently in use.

As part of its ongoing ionospheric studies in support of medium and high frequency communications, the department continued to record and analyze data from the ISIS 1 and 2 satellites, which have now been operating for more than 12 years.

The department provided scientific leadership to the High Frequency portion of the Waves in Space Plasmas experiment, which is a collaborative Canada/U.S. investigation. On behalf of this experiment, NRC let a contract to Canadian Astronautics Ltd. for the development of equipment which will be flown on the Spacelab-6 mission of the Space Shuttle Program.

A computer-based procedure was developed in preparation for the World Administrative Radio Conference on HF broadcasting. If adopted, the procedure would assist the IFRB in planning the use of broadcasting frequencies, making it possible to allocate frequencies on a seasonal basis, and so to alleviate the present worldwide congestion.

Canadian Patents and Development Ltd. was requested to select a licensee for the department's VHF/UHF prediction program, which is a sophisticated computer-based procedure for determining the radio coverage of transmitters operating in these bands. The licensee will make the program available to those outside the department who wish to use it for their own system design and evaluation purposes.

In co-operation with Université Laval, the department continued to study problems associated with the use of the UHF land mobile band. The department's researchers carried out experimental measurements to determine the data rates permissible in the urban environment, while the university conducted computer simulation of transmission quality using various models and coding structures.

Studies of UHF and VHF propagation in the Canadian Arctic were continued to investigate the possibility of taking advantage of unique propagation conditions to improve the reliability and efficiency of Arctic communications.

In the microwave region of the spectrum, feasibility tests were carried out to examine the reliability of frequencies near 15 GHz for short distance (up to 15 km) data communications. It is planned to implement a system for the department's use during the 1983/84 fiscal year. As well, some special studies were conducted in co-operation with Teleglobe Canada to further evaluate sites in Ontario which are under consideration for Intelsat earth stations. Initial plans were developed to examine earth-space propagation limitations in the frequency range 30-40 GHz.

Radio communications

In the area of radio communications technology, industrial development of a radio crosspatch and automatic telephone-interconnect equipment by Baron Communications, Vancouver, is nearing completion. The object is to develop a low-cost operator-free direct-dial radio-telephone system that could be used by small aircraft, ships and remote communities.

This microprocessor-controlled equipment features a variety of options, which include:

- selective call of other stations in an HF SSB or VHF/UHF FM network, with automatic answer-back;
- capability for making or receiving local or long-distance telephone calls from these portable stations; and
- radio crosspatch enabling a VHF or UHF fixed mobile or hand-held operator to talk on a long-distance HF SSB network.

The radio signal environment of urban areas can cause interference that affects the performance and reliability of radio communications. Strong signal levels can also affect the performance of a wide variety of consumer electronic equipment. Comprehensive measurements taken last year of signal levels in Toronto, Montreal and Ottawa for AM, FM radio, TV and land mobile radio are still being analyzed and interpreted. These urban measurements are complemented by similar measurements made inside buildings by researchers at McGill University. When complete, these studies will conclude a program that started in 1980/81.

Radio noise is another phenomenon that affects radio communication. The department has been collecting data on radio noise levels as the basis for standards setting, for the design and performance prediction of communications systems, and for the assessment of sources of interference. Work this year has been concerned with measuring radio noise levels in the mobile radio bands, particularly the new 800 MHz band, in urban and suburban sites. Some of this work has been carried out in collaboration with Université Laval in Quebec City.

Investigations continued during 1982/83 into the re-radiation of medium frequency (AM) signals from power lines and high buildings located near broadcast radio stations. Re-radiation affects the pattern required by the antenna arrays, and thus the reception of signals. This work has developed into a comprehensive research program, involving collaboration between government, university and industry, particularly power companies. The work in progress is partially funded by the Canadian Electrical Association. The extensive research activities which have been carried out during the past several years will wind up in 1983/84. A final report and guidelines are expected to be issued in 1984/85.

Optical communications

Today's optical communication links in many ways give better performance than links based on metallic conductors and radio frequency carriers and concentrated R&D world-wide continues to improve performance. A semaphore-like on-off signalling scheme is usually employed in fibre-optic systems because it is very difficult to control adequately the modulation properties of the optical source.

Researchers at the Communications Research Centre have undertaken a study of the modulation dynamics of optical sources and have made some fundamental contributions. The study is expected to increase understanding of semiconductor laser sources and enable system designers to specify procedures for precisely controlling the source under modulation. In this way, the information-carrying capacity of optical-fibre systems will be increased at minimal cost to the user.

A new all-digital integrated fibre-optic communication system is being developed. A prototype with capacity to transmit digital television, telephone, AM radio and a data channel to the same subscriber moved into final concept stage during the year. Circuits are now being constructed for the system.

Advances continue in the development of components suitable for use in fibre-optic local-area networks, including a variable single-mode fibre-optic switch.

Optoelectronics development has centred on the photoconductive optoelectronics crosspoint switch. Integrated arrays of gallium arsenide photoconductors have been made and tested, demonstrating the potential of the optoelectronic technique for switching wideband television signals. At the same time, a matrix switch for the 1-4 GHz band was constructed to explore the use of optoelectronic switching on board communication satellites.

A new optical coupler of the biconic type was invented. Built entirely of optical fibres, it could considerably improve the performance of fibre-optic distribution networks.

University research

Since 1971, the Department of Communications has maintained a special fund to finance communications research in Canadian universities which supports the responsibilities and priorities of the federal government.

In 1982/83, 35 contracts totalling $815,834 were awarded to Canadian universities to conduct research dealing with the regulatory, social, economic and technological aspects of communications and culture. These projects are especially useful because they complement and enrich the research program conducted by the department and train new experts in fields relating to departmental activities.

University research contracts awarded in 1982/83

Region	Number	Value
Atlantic	4	$ 46,420
Quebec	7	181,900
Ontario	17	348,000
Central	3	112,434
Pacific	4	127,080
Total	35	815,834

Centres of excellence

In 1978, a separate program to promote French-language centres of excellence was set up by the department to encourage research in the communications field by Francophone universities and to develop teams of skilled scientists and technicians in areas of interest to the department.

Seventeen contracts totalling $408,970 were funded under this program for the 1982/83 period.

Centres of excellence contracts awarded in 1982/83

Region	Number	Value
Atlantic	1	$ 25,000
Quebec	13	339,470
Ontario	3	44,500
Total	17	408,970

Contribution program

In 1980, the department received approval for a program to provide financial support to communications associations, conferences, seminars and symposia sponsored by Canadian universities. During the year 1982/83, $25,000 was expended to support five events of this type.

Contributions to symposia, seminars and conferences

Event	Sponsoring University	Contribution
Delta Seminars	Montréal	$5,000
Videotex Conference	Guelph	1,500
Colloque sur la qualité de vie au travail: Le bureau de demain	Montréal	5,000
Association des femmes diplômées des universités du Québec: Colloque sur la microtechnologie	Laval	5,000
Association de la recherche en Communication du Québec: Séminaire	Université du Québec a Montréal	8,500
Total contributions		25,000

Transfer of technology

The Department continued to transfer technology developed in its research laboratories to Canadian industry through the use of the National Research Council's Program for Industry/Laboratory Projects (PILP). Financial assistance in the form of contracts or contribution arrangements is provided to firms interested in developing a particular technology and marketing the end product.

During 1982/83, four new projects were started. This brought the number of active projects to 14. Federal funding for these projects during the year came to approximately $2 million.

Technology transfer projects funded in 1982/83

Province	Number	Value
British Columbia	3	$ 169,586
Manitoba	1	29,464
Ontario	6	1,146,388
Quebec	4	628,201
Total	14	1,973,639

Other activities

In addition to its own activities, the department carries out various research projects for the Department of National Defence and provides advisory services in support of military radar and communication. The department is also a source of expertise in these fields for other departments and agencies such as Energy, Mines and Resources; Transport; the National Research Council; and Industry, Trade and Commerce.

Space Communications

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During 1982/83, the department continued to explore innovative ways of using advanced satellite technology so that Canadian space initiatives can more fully contribute to the achievement of Canada's economic and social goals.

Earlier experience with the highly successful Hermes and Anik B programs showed that there are many areas where satellite technology can offer a more effective, or even previously unavailable, solution to Canada's communications needs.

Applications development

Because of the rapid pace at which space technology has advanced, communications users are often not aware of the capabilities of satellite technology. The department has therefore taken much of the initiative in applications development by having market requirement surveys undertaken and by evaluating the effectiveness of satellite systems in meeting the communication needs of Canadians.

Market analyses are currently underway to identify the requirements for satellite-based one-way data distribution services in Canada. Such one-way services could be used, for example, to distribute stock-market information.

Also under study are the requirements for telecommunication via satellite in the field of health care. This analysis is examining achievements to date in telehealth techniques and will suggest what should be done to ensure continued development that will benefit all Canadians.

Yet another project, this one carried out in co-operation with the University of Saskatchewan at their request, aims to determine the economic viability of using satellites to deliver continuing education courses to veterinarians in the four western provinces.

In addition, experiments are underway to support the development of satellite communications to serve mobile terminals in the 806-890 MHz band and L-band. These experiments are discussed in more detail in the section dealing with mobile communications via satellite.

Satellite-aided search and rescue

Planning has been going on since the 1970s to use satellites to detect and locate emergency transmissions from aircraft and ships in distress.

Canada, the United States and France agreed in 1979 to co-operate in a search and rescue satellite (SARSAT) program. Norway, Sweden and the United Kingdom have since joined the program and discussions are underway with Finland, Japan and Denmark.

The SARSAT partners are also co-operating with the Soviet Union, which has implemented a compatible satellite-aided search and rescue program known as COSPAS. The objective is to achieve extended co-operation with the ultimate aim of achieving a single international system. Two Soviet satellites were launched during the past year for this purpose. Both have been operating successfully and have been made available for use by the SARSAT parties.

Under the SARSAT agreement, Canada supplied radio repeaters built by Spar Aerospace Ltd. for installation on three U.S. polar-orbiting weather satellites. The first of these repeaters was successfully launched on NOAA-E (NOAA-8 after launch) in March 1983, and is operating normally.

A 15-month demonstration and evaluation phase began in February 1983. The purpose of this phase is to obtain data on the ability of the COSPAS-SARSAT system to respond more rapidly than traditional search and rescue systems to distress alerts and to reduce search time by providing more accurate position information.

Since testing operations began in September 1982, there have been 14 major air or marine distress incidents involving 121.5 MHz alert and location data from COSPAS-SARSAT. A total of 40 persons were involved, 36 of whom survived. Five of these incidents were in Canada; 14 people were involved, and 13 survived. Initial indications of system performance are thus very encouraging.

At the conclusion of the demonstration and evaluation phase, it is expected that the participating nations will decide to implement an interim operational phase. Plans are being made to equip three additional U.S. weather satellites (for an eventual total of six) with search and rescue instrumentation. Including satellites provided by COSPAS, it is expected that the co-operative program will be able to maintain two to four satellites in orbit until 1990. This will allow sufficient time for the establishment of a fully operational future system under international auspices.

Mobile communications via satellite

Another application being studied by the department is the use of satellites to improve both the reach and the reliability of land mobile communications. A land-mobile satellite system could provide two-way radio and radio-telephone service throughout Canada or North America, without restriction on operating distance.

Feasibility studies completed in the spring of 1982 found that there would be sufficient demand to make such a mobile satellite communications (MSAT) system for Canada commercially viable.

Project definition studies commenced following Treasury Board approval in July 1982. The main objectives of this phase are to design the MSAT demonstration system, to develop the required technology, to carry out commercial viability studies, and to prepare a proposal and cost estimates for the next phase, implementation.

The project definition phase is being conducted through some 40 contracts with Canadian industry.

- The major spacecraft definition and design contract has been awarded to Spar Aerospace Ltd. in Montreal.
- Telesat Canada, as the sole commercial satellite operator for domestic services in Canada, has been given a major contract to analyze the commercial viability of a follow-on system.
- Woods Gordon is carrying out an in-depth study of the market for MSAT services.
- Other key studies are being carried out on the socio-economic impact of MSAT.
- A number of technical studies are underway on the various earth stations, including mobile terminals, and on three proposed modulation schemes.

In-house work is proceeding on designing a post-launch communications program, and on resolving a variety of policy and regulatory issues relating to MSAT.

In addition to MSAT work, experiments in mobile communications via satellite are in progress to support development of systems for the 806-890 MHz band and L-band. Characterization of propagation channels, simulation of the complete satellite link and evaluation of modulation schemes are being carried out. Some of the experiments involve co-operative programs with Transport Canada, Teleglobe and INMARSAT.

Anik B communications program

Pilot projects and trials using the 14/12 GHz transponder of the Anik B satellite continued during the year.

Three major television projects, two of which had been developed during the early years of the program (one by TVOntario, the other by the Knowledge Network of the West) and one of which had been operating on an interim commercial basis (La SETTE), transferred to full commercial operation on the Anik C satellite early in 1983.

As planned, the scope of the program was reduced in September to concentrate on the development and application of narrow-band systems. Of particular interest were projects involving voice and data communications between offshore drilling platforms, onshore telephone company networks, oil company offices and Memorial University of Newfoundland, and an educational project of TVOntario using interactive Telidon technology.

The department continued its analysis of the direct satellite broadcasting demonstrations and field trials carried out using the Hermes and Anik B satellites. Data from these analyses were combined with new information to permit the construction of theoretical models which could be applied in analyzing the various options for a Canadian DBS system. This work is helping the department assess future requirements for satellite spectrum and orbit resources.

In February 1983, the second phase of a technical pilot project on Anik B was completed. The project, carried out in co-operation with CNCP, used time-division multiple access to simultaneously serve many users requiring less than a full satellite channel for their communications.

Phase two of the project concentrated on the demonstration of voice, data, and computer services to two major customers of the Government Telecommunications Agency -- the Atmospheric Environment Service of Environment Canada and the Canada Employment and Immigration Commission.

Direct broadcasting by satellite

Direct broadcasting by satellite (DBS) promises to become a major new application of satellite communications throughout the world in this decade.

In Canada, where DBS technology was successfully pioneered on Hermes and was further developed on Anik B, the need to improve television services to approximately six million Canadians in rural and remote areas of the country led the Department of Communications to conduct a multi-disciplinary program of planning studies designed to guide decisions on the implementation of a broadcasting satellite service in Canada.

Conducted in close consultation with all sectors of the communications industry, provincial governments and the CRTC, the studies fell into four general categories: technical, socio-demographic, economic, and regulatory and institutional. The studies program began in April 1981 and concluded in March 1983.

The resulting reports include detailed statistics on requirements for improved quantity and quality of television broadcasting services, market surveys showing how much people would be willing to pay for DBS service, and evaluations of the need for complementary services such as radio and teletext broadcasting.

The studies also assessed the impact that introducing a DBS service in Canada would have on the broadcasting, manufacturing and program production industries, as well as the potential impact of U.S. DBS services which will spill over into Canada.

Data from the technical and cost studies, combined with other factors such as regional needs and the requirement for bilingual programming, will provide the basis for assessing the viability of a Canadian DBS service and determining the type of system which best meets Canadians' needs.

An information report based on the DBS study program will be released for public comment in 1983.

Spectrum and orbit planning

Spectrum and orbit planning is an integral part of the department's work. By their very nature, communications and broadcasting satellites must use the radio spectrum and geostationary orbit in their operation. These natural resources are becoming congested on a worldwide scale, and so negotiations with other countries are necessary to insure that Canada's activities in space are not constrained by lack of access to the spectrum and geostationary orbit. Negotiations are complex and require detailed knowledge of satellite systems and the implications of orbit-sharing proposals on the feasibility and cost-effectiveness of those systems.

An agreement between Canada, the United States and Mexico was concluded on June 7, 1982, concerning the orbital positions of geostationary satellites of these three countries in the 101°W to 122°W arc. The agreement followed lengthy discussions which began in 1981/82. It gives Canada three orbit positions in the 6/4 GHz band and four orbit positions in the 14/12 GHz band.

In the context of Canadian preparations for the 1983 Regional Administrative Radio Conference on the broadcasting satellite service in the western hemisphere, the department completed its examination of possible spectrum and orbit assignments for Canadian direct broadcasting satellites, and submitted proposals to the International Telecommunication Union. The department expects that these proposals will enable Canada to implement cost-effective interim systems under the forthcoming plan and to meet its long-term requirements.

Canada was one of eight countries represented on the international panel of experts formed to prepare for this regional conference. The Canadian representative on the panel also chaired the software working group which developed sophisticated computer programs for analyzing possible frequency assignments. The software was to be used at the conference by the International Frequency Registration Board (IFRB).

A third major spectrum planning task was to find an arrangement whereby mobile satellite systems in Canada can share the 806-890 MHz band with existing and planned terrestrial mobile systems. Work continues in this area, with the objective of finding spectrum not only for the MSAT system but also for its successors. In this connection, an Advance Publication of Information document on MSAT was sent to the IFRB in Geneva.

L-SAT

Canada is taking part in a program of the European Space Agency (ESA) under an agreement of co-operation signed in 1978. The purpose of the program is to produce and demonstrate a large commercial satellite (L-SAT) capable of carrying a range of communications and other equipment. Launch of the satellite is scheduled for 1986, to be followed by five years of on-orbit operation. The Canadian government's contribution is estimated at 9 per cent of the overall program cost.

During 1982/83 Canada continued to participate in the L-SAT development and manufacturing phases along with a number of ESA member countries, notably Italy, the Netherlands and the United Kingdom.

The prime contractor for L-SAT is British Aerospace Ltd. Spar Aerospace Ltd. is a major subcontractor, while COM DEV Ltd. is providing specialized components. Spar is building the solar array for the spacecraft and will have a major responsibility for environmental testing of the spacecraft at the department's David Florida Laboratory, which was chosen over European facilities. Both Spar and COM DEV are to produce payload components.

Canada's interest in the program is primarily with the spacecraft platform rather than the demonstration payloads which are mostly oriented towards Europe; however Canada may utilize L-SAT to perform communications experiments at 20/30 GHz.

Our participation will give Canadian industry a role in the commercial exploitation of the satellite and the right to use the L-SAT structure for later domestic purposes such as MSAT and direct broadcast satellites. Major subcontractors in Canada, Italy and the Netherlands have joined with British Aerospace to form a consortium to build and market L-SAT derivatives, which will be known as OLYMPUS satellites.

David Florida Laboratory

The recently expanded David Florida Laboratory provides environmental test and integration services to a diverse and growing group of customers including government agencies and the Canadian aerospace and communications industries. Services are provided on a partial cost-recovery basis.

Total revenues in 1982/83 amounted to $992,000. Commercial programs were predominantly aerospace-related, for both domestic and export markets. Some of the major programs for which support was provided were: Anik D1 and D2, Galaxy, Viking, the Shuttle Remote Manipulator System (Canadarm), SARSAT, SATCOM, COSPIN, Space Net, Astromast and Skynet 4.

Additional work worth approximately $500,000 was performed in support of the department's own programs.

Main activities in 1982/83 were:

- completion of integration and environmental testing of Anik D1 and D2;
- integration and commencement of environmental testing of the Skynet 4 UHF antenna for Canadian Astronautics;
- continued integration and test of remote manipulator systems for future U.S. Space Shuttles; and
- improvement of facilities for vacuum simulation, payload evaluation and structural properties determination in preparation for Brazilsat, L-SAT and other projects for which commitments have been made.

Technology development

The department's space technology development activity covers a broad spectrum of R&D while concentrating on elements of particular importance to Canada. Results provide a base of knowledge and expertise for other space communications work undertaken by the department. Much of this research is conducted in-house, while a portion is contracted out.

Current efforts include development of:

- UHF modems for satellite applications;
- modems and switch matrix for satellite-switched time-division multiple-access applications in the 12/14 GHz frequency band;
- a receiver front-end to be used on direct broadcast satellites to receive uplink signals at 18 GHz;
- reliability studies on commercial microprocessor devices when operating in a space-radiation environment;
- advanced microprocessors and on-board self-contained microprocessors for fault-tolerant or autonomous operation of future satellites;
- gallium arsenide semiconductor device technology for application to microwave, opto-electronic and high-speed logic components in satellite communications;
- linearization techniques for SHF and UHF amplifiers to improve signal quality;
- component technology for use in the EHF frequency band;
- spacecraft dynamics and control systems technology, including an integrated spacecraft attitude control system and an attitude beam control system; and
- large, flexible structures and mechanisms including retractable solar arrays, high-power solar array drive and power transfer assemblies, and high-performance materials for use in future satellites for advanced communication and remote sensing.

Development of space subsystems and components

For several years the department has had a special budget for industrial contracts covering the development of space subsystems and components that will be needed in future Canadian systems.

With a budget of $2.7 million in 1982/83, this industrial contract program funded a total of 25 new and ongoing projects. Fourteen new contracts were awarded, for a value of $2.3 million.

A formal evaluation of the program was undertaken at the request of the department by the Bureau of Management Consulting of the Department of Supply and Services. A final report is expected by mid-summer 1983.

Through this program, financial assistance was provided to Microtel Pacific Research of Burnaby, B.C., which is developing a thin-route satellite communications system for operation with Anik C. Using a single channel per carrier, the new system will make it possible to extend voice and data communications services to remote communities and resource industries in western Canada.

The B.C. Telephone Company, the corporate parent of Microtel, will implement the system in mid-1983, integrating it with the existing switched voice and data networks. Manitoba Telephone System will also put this system into service during 1983.

The total federal share of the thin-route system development program in 1982 was $1.4 million, including bridge funding of $1.2 million from the Department of Supply and Services.

Transfer of technology to Canadian industry

Canadian companies are also being assisted through the transfer of technologies developed in the department's laboratories. Such transfers help to ensure that Canadian industry has the products it needs to compete domestically and internationally. As a result of recent technology transfers from the department,

- COM DEV Ltd. of Cambridge, Ontario, produced the first Canadian surface acoustic wave (SAW) devices for processing signals in communications satellites and radar systems;

- Linear Technology of Burlington, Ontario, produced the first Canadian vertically diffused metal-oxide semiconductor (VDMOS) devices, which will be used in UHF applications; and

- Optotek Ltd. of Ottawa produced gallium arsenide field-effect transistors (GaAs FETs). These are used in television receive-only terminals, on board satellites and in microwave towers.

The first two transfers were financially assisted under NRC's Program for Industry/Laboratory Projects (PILP), while the third was funded through a special inter-departmental program to develop this technology.

The transfer of technology to Bristol Aerospace Ltd. of Winnipeg, Manitoba, relating to the development of 406 MHz emergency locator transmitters for SARSAT, also supported by PILP, was completed.

Spurred by commercial demands for voice security and for voice/data compatibility, by military demands for low-rate voice coders, and by the low power and bandwidth constraints that will apply to mobile radio service via MSAT, the Department of Communications has accelerated the transfer to industry of its technology developments in voice coding and voice privacy equipment. Under PILP sponsorship, Digital Telecommunications Ltd. of Mississauga, Ontario, is preparing for production of a digital voice coding unit, while MDI of Vancouver, B.C., will be completing development of an analog voice privacy unit.

New methods of analysis and testing for large flexible structures are being developed and transferred to Spar for application in future satellite projects such as L-SAT, MSAT and RADARSAT. In particular, the unique properties of the Spar Astromast, the deployable "spine" of the L-SAT solar array designed by Spar, are being completely explored and defined as an initial and practical demonstration of this new structural dynamics technology.

Telesat market access study

Market access was the subject of investigation by an interdepartmental working group organized in the spring of 1982 under the chairmanship of the Department of Communications. The group looked at ways of increasing access by the Canadian space industry to the market for domestic satellites.

Following various interactions with industry and Telesat Canada, the working group concluded that the only way of achieving more than 50 per cent Canadian content of high technological value in satellites procured by Telesat would be for a Canadian prime contractor to capture this market. Essentially, this would mean that Spar Aerospace would have to provide most of the Canadian content.

With advances in technology, the working group reported, new capabilities would be required if the Canadian space industry was to remain competitive. In addition, expansion of the government's space environment test facilities at the David Florida Laboratory might be required. The working group also noted that the success of the Canadian space industry did not depend solely on the Telesat market; the capture of a share of the world market was also considered necessary.

Prime contractor capability

A long-standing objective of the department has been to develop a Canadian prime contractor for communications satellites who could compete successfully in both the domestic and export markets. Through a series of contracts, the department has strongly supported the emergence of Spar Aerospace in this role.

Spar's development was further assisted in 1982/83 through contracts from the department worth $14.5 million for satellite sub-systems, which directly advanced Spar's technical capability and contributed to export sales of more than $200 million. Included in the export sales was a prime contract from Brazil for a complete satellite system, the first prime contract for Spar outside Canada.

A comprehensive two-year R&D support program with Spar valued at $13 million is planned for 1983/84 and 1984/85.

Marketing support

Marketing activities were co-ordinated by the department in support of the Canadian space communications industry in such countries as Brazil, Colombia, Mexico, Nigeria, the Peoples Republic of China, Papua New Guinea, the Republic of Korea and the United Kingdom.

Most of these activities were undertaken in co-operation with the Department of External Affairs/Trade Development to support vendors of space hardware and related services such as consulting, training and project management.

The department also supported the Department of External Affairs/Trade Development in fostering Canadian industry participation in the U.S. Department of Defence MILSTAR, the largest satellite communications program in the world.

A major survey of the potential Canadian market for earth terminals in this decade was initiated during the year under review. The objective is to establish user plans and to identify requirements in order to assist Canadian suppliers in retaining a major share of the market.

Other

In co-operation with other interested departments, the Department of Communications is exploring the future use of the NASA Space Technology Experimental Platform (STEP). This retrievable platform will be placed in orbit by future Space Shuttles, allowing for cost-effective testing of materials and techniques in the actual space environment.

The scientific satellites ISIS 1 and ISIS 2 continue to be used for propagation experiments and data gathering. These outstandingly successful satellites have been in continuous use since 1969 and 1971 respectively. Funding for current operations is provided by the Department of National Defence.

In addition to the programs described here, the Space Sector performs R&D in the area of military satellite communications for the Department of National Defence. The sector also provides specialist expertise to support space applications programs sponsored by other departments and agencies. These include aeronautical and marine navigation, space science experiments, remote sensing and weather forecasting.

Telecommunications and Broadcasting Policy

5

Broadcasting has played a unique and vital role in fostering Canada's identity as a nation, giving voice to our individual and collective sense of the world and our place in it. In our future national development, it may be even more important, as new technologies like direct broadcasting by satellite and new services such as pay television augment its power to shape our ideas and values.

To meet the challenges of the changing environment, the Minister announced a new broadcasting strategy for Canada on March 1, 1983, culminating months of preparation in the department.

Other policy development activity during the year related to the department's general mandate to ensure the orderly growth of communications services in Canada. This work included the formulation of policies governing the utilization of the radio spectrum and the introduction of new services; analysis of the institutional, corporate and intercorporate structures and relationships of telecommunications carriers; study of economic trends in the communications and informatics industries; promotion of standardization in telecommunications and information technology; and monitoring and analyzing regulatory matters for which the Minister of Communications is responsible.

Broadcasting strategy

The government's broadcasting strategy of March 1 contained a series of policy initiatives and proposals to maintain the broadcasting system as an effective vehicle of social and cultural policy, to make available a solid core of Canadian programming and to provide Canadians with greater choice of programming.

By the end of the year under review, the department had already taken action to implement several of the new policies.

An agreement had been signed with the Canadian Film Development Corporation (CFDC) covering the establishment of a Canadian Broadcast Program Development Fund to assist private production companies and independent producers, to bring to Canadians a full range of high quality television programs, specifically in the categories of drama, children' programming and variety. The government committed a sum equivalent to 254 million (1983 dollars) to this fund over the next five years.

New regulations had been drafted under the Radio Act to permit individuals and certain commercial establishments to operate dishes for the reception of TV signals from satellites, without obtaining a radio licence.

An independent study was commissioned to examine options for the regulatory status of cable in light of the broadcasting strategy. Cable is called on to play a crucial role in expanding viewers' choice by providing the entire range of new Canadian programming and non-programming services and many foreign services, in addition to the conventional services it now carries. The department also commissioned a report on pricing in the cable television industry.

Northern Broadcasting Policy

Another major step in implementing the strategy had been taken with the announcement on March 10 of the Northern Broadcasting Policy and the Northern Native Broadcast Access Program, following extensive consultation with native organizations.

These new measures recognized the need to extend broadcasting services to the North in a way that will give full expression to the cultural values of the native populations living there. They also will ensure that native northerners have a voice in the introduction of new services in their communities.

Up to $40.3 million in federal funds will be made available over the next four years to enable northern native organizations to produce their own radio and television programming that reflects their languages and cultures.

Extension of services

The department is continuing its efforts to increase and equalize the choice of broadcast programming across the country by providing advice to groups applying to the CRTC for licences to distribute the package of TV and radio signals available from Canadian Satellite Communications Inc. (Cancom).

By year-end, Cancom service had been licensed for a total of 648 communities, and the package had been expanded to include authorization for eight TV channels and ten radio stations.

A simple explanation of the technical aspects for community distribution was provided in a handbook published and distributed by the department in 1982 under the title Community Distribution of Satellite Programming. The handbook also gives information on regulations, licensing requirements, financing, and sources of further advice and assistance.

In the area of extension of services to the disabled population, the department continued to work with the Canadian Captioning Development Agency and broadcasters to establish closed-captioned television services in Canada based on Telidon. The federal government is providing a total of $350,000 for this purpose. The department also called for proposals to develop a community handbook on radio reading services for the visually impaired and otherwise print-handicapped.

A study on the telecommunications needs of speech- and language-impaired Canadians was completed and is scheduled for release later.

In reply to a recommendation in Obstacles, the report of the Special Parliamentary Committee on the Disabled and the Handicapped, a Consultative Committee on Communications and Physical Disability was formed to advise the department on the development of a national policy on communications and physical disability. The committee will begin meeting in 1983 and will submit its final report and recommendations to the department by March 1985.

Spectrum and radio systems policy

Several new policies governing spectrum utilization and the introduction of new radio services were drafted, released for comment or implemented during the year.

In October 1982, the department published its policy on cellular mobile radio telephone systems and called for applications. Cellular systems are designed to allow radio frequencies to be re-used within a geographic service area, thereby promoting efficient use of the radio spectrum and consequently large numbers of mobile telephones. Seven industry groups and nine telephone companies submitted a total of 113 applications.

Another new policy dealt with the microwave frequency range 0.890-10.68 GHz. Additional spectrum was made available to meet increased demand for fixed services and new licensing policies were announced encouraging the use of new technology to improve spectrum utilization.

Final plans were announced in December 1982 for implementing mobile service in bands recently allocated for this purpose by the 1979 World Administrative Radio Conference. The new bands are 420-430 MHz, 806-821 MHz and 851-866 MHz.

At the same time, the department announced policy guidelines for the licensing of trunked mobile radio systems. In this relatively new type of radio system, communications traffic may pass through any one of a "trunked" group of channels, the route being automatically selected. Trunked systems are expected to allow a greater number of mobiles per channel and to provide improved service (for example, greater privacy and shorter waiting times).

As part of its initiatives to extend communications services to all Canadians, the department is encouraging the use of low-power rebroadcasting transmitters. In December 1982, the conditions under which low-power retransmission of TV and FM radio signals will be certified were made public.

The department also announced that it would consider applications for Technical Construction and Operating Certificates for point-to-point relays of broadcast signals using broadcast spectrum in cases where applicants can demonstrate this will contribute to the improvement of service in underserved areas.

Another policy development affecting broadcasting is the 18-month period of experimentation in AM stereo broadcasting announced by the department. Plans called for a single system to be adopted at the end of this period to ensure maximum accessibility to the Canadian public. However, representations have been received pointing out that it may not be necessary to restrict AM stereo to one system since new equipment has recently come on the market that can receive several systems.

In October 1982, the department released proposals to meet the increasing demand for radio links of one to six channels in the frequency range 30-890 MHz. These links are used for such purposes as extending paging services, monitoring pipeline operations and providing studio-to-transmitter connections for mono broadcasting. The public was invited to comment on the proposed policy before January 31, 1983.

Proposals were released for the development of public airplane-to-ground telephone service in Canada (planephone). Deadline for comments was June 15, 1983.

Proposals were also released for the allocation of frequency spectrum in 900 MHz for Personal Radio Services.

Industry structure and services

As part of its mandate to ensure the orderly growth of communications systems in Canada, the department develops and implements policies relating to communications services and to the institutional and corporate structures and relationships of the industry that provides the services.

Developments in new services are carefully monitored by the department on a continuing basis. Areas of particular interest during the year were direct broadcasting by satellite, informatics and plans for MSAT. Attention also focussed on issues related to electronic mail.

An independent study of enhanced services was commissioned as part of an ongoing project to predict the impact and determine the policy implications of these services. Voice, text and graphic message services are included within the scope of the study, as is access to computer-based information.

Competition between terrestrial and satellite carriers and its effect on the Canadian telecommunications industry was the subject of another outside study commissioned by the department.

Terminal attachment

Many individuals in Canada now own telephones or other terminal equipment which they connect to the facilities of the telephone company. In November 1982, the CRTC issued a major decision stipulating that equipment to be connected to the systems of the federally regulated communication carriers must meet Certification Standard CS-03, developed by the Terminal Attachment Program Advisory Committee.

The Department of Communications actively participates in the work of this committee. During the 1982/83 fiscal year, the committee developed new certification standards for Telex and TWX terminals and revised existing standards for single-line telephones, push button telephones and private branch exchanges.

Through its engineering laboratory, the department is also involved in certification of terminal equipment under this program, as outlined in chapter 6.

Microwave licensing

Significant improvements have been made in the department's process for licensing private microwave systems used by broadcasters to bring in distant radio and TV signals.

The new procedures, announced in March 1983 and scheduled to come into effect on May 1, 1983, call for public announcement of all microwave licence applications made by broadcasting undertakings.

Shared use of microwave facilities is expected to result from this approach, reducing the cost of bringing additional programming services into small communities. The new approach will also ensure significantly more efficient use of the radio frequency spectrum.

Northern Communications Assistance Program

Since 1978, the Department of Communications has been making financial contributions towards the capital cost of bringing basic local and long-distance telephone service to some of the smaller settlements in the Northwest Territories.

Plans originally called for extension of service to 28 communities, including six on a contingency basis as an alternative to current military facilities, with a federal contribution of up to $9 million and a similar investment by Bell Canada and NorthwesTel (a subsidiary of CN Rail), the companies providing telephone service in the N.W.T. Implementation was delayed for some communities by the difficulty of finding suitable technology to serve some of the smallest settlements, and program approval expired at the end of 1982/83.

Service was extended to two communities, Lac la Martre and Rae Lakes, during the year under a contract with NorthwesTel, bringing the number assisted under this program to 14. Federal contributions since 1978 total $5.6 million.

Telecommunications standards

Over the past few years, there has been growing recognition of the need for national telecommunications standards.

A consultant's report on the role of the department in telecommunications standardization was a major factor in the January 1983 decision by the Canadian Standards Association to establish a Telecommunications Steering Committee. As a result of this decision, there is now a recognized body within the national standards system with responsibility for promoting and developing standards for telecommunications.

A further report, to be completed in 1983, was commissioned during the year on the department's role in the standardization of telecommunications and information technology.

Regulatory affairs

The communications industry is a key component of the social and economic infrastructure of Canada. Therefore, the laws and regulations governing telecommunications and broadcasting must take into account cultural, social, economic and technological changes. They must also balance the interests of consumers and the public at large with the need for the communications industry to be commercially viable.

Based on its analyses of decisions made by independent regulatory bodies and on assessments of industry concerns and the public interest, the department provides advice to the Minister of Communications, within the context of overall government policy, on regulatory matters for which he is responsible.

Departmental staff also assist senior officers of the department in their capacities as directors of Teleglobe and Telesat Canada.

Rate increase proceedings and special issue hearings are carefully analyzed. The department also conducts studies pertaining to regulatory developments within provincial jurisdictions, in the United States and in Western European countries.

In 1982/83, the department monitored CRTC rate proceedings for B.C. Tel and Telesat Canada, as well as its reviews of Bell Canada's construction program, and the operational performance of federally regulated carriers.

Bell Canada's intention to substantially alter its corporate structure, announced in June 1982, was a major regulatory issue in which the Department of Communications was involved during the year. The department appraised Bell's re-organization proposal and provided advice to the government leading to the commissioning of a CRTC inquiry on the effects the re-organization would have on rates paid by Bell subscribers and on the ability of the commission to effectively regulate Bell's telecommunication services. The CRTC hearings took place in February 1983.

Another regulatory matter of continuing interest to the department is the CRTC's Cost Inquiry. Phase III hearings, held in 1982, focussed on the prices charged by carriers who operate in both monopoly and competitive markets.

Pay television continued to demand the department's attention. In July 1982, the CRTC issued a correction to its decision of March 1982 licensing six pay-TV network operators. The effect was to eliminate the annual nature of the requirement to devote a certain percentage of revenues and programming budget to Canadian program acquisition or investment. A number of interested parties made submissions to the Governor in Council, stating that this change would impair pay television's contribution to the program production industry, especially in the early years of the licence period. The Governor in Council decided to set aside the CRTC order, holding that appropriate financial requirements for Canadian programming are of importance in ensuring that pay television significantly contributes to the strengthening of the Canadian program production industry.

The department has also followed closely CRTC decisions relating to cross-ownership of newspapers and broadcast media. In July 1982, the government directed the CRTC to deny new broadcasting licences or licence renewals to applicants who own daily newspapers in the same market area. The CRTC may make exceptions if it is satisfied that it would be more in the public interest to grant or renew a particular licence.

The direction was one of the steps taken by the government in response to the Royal Commission on Newspapers. The concern is that cross-ownership between newspapers and broadcasters in the same community could reduce the diversity of opinion and sources of information available to the public.

Six-five guidelines

In the budget speech of June 1982, the government asked federal regulatory agencies to limit regulated rate increases to 6 per cent in the first year and 5 per cent in the second year, unless exceptional circumstances justified greater increases. Under the program, the Department of Communications reviews regulatory rate decisions to ensure that the six-five guidelines are being adequately applied with respect to the rates charged by the cable television industry and by the federally regulated telecommunications carriers.

By virtue of Orders in Council passed in August of 1982 Bell Canada, CNCP Telecommunications, Terra Nova Telecommunications and NorthwesTel, all of which had applications pending for increases that exceeded the six-five guidelines, were awarded six-five rate increases. Telesat Canada, which was about to file for a substantial increase in rates, was also granted a six-five increase. In addition the Minister of Communications issued a statement in August of 1982 which clarified the position of the cable industry under the six-five guidelines. As a result of this statement increases in cable rates were limited to the levels allowed by the guidelines.

Economic policy

The department continued to assess economic, industrial, marketing and technological trends in the communications sector and the economy as a whole and to examine options for departmental contributions to communications policies in these areas.

Activities in 1982/83 included participation in the Interdepartmental Task Force on Trade in Services, an analysis of the job creation potential of communication technology and an assessment of business communications technology, marketing and policy.

In addition, a study was completed of the role of the department in fostering the development of new technology and its transfer to industry.

A variety of economic analyses relating to the communications sector and its elements were carried out by the department in 1982/83.

Among these were:

- an analysis of software production and the Canadian software industry;
- an evaluation of information available on computer/communications and gaps in this information, prepared as a background report to the Interdepartmental Task Force on Transborder Data Flows and suggesting joint remedial action by the Department of Communications and Statistics Canada;
- a review of the issues that need to be taken into consideration in making plans for strengthening the R&D components of the carriage, equipment manufacturing, computer services, and information content industries;
- an analysis of the sectoral balance of trade in communications carriage, equipment, and computer services; and
- an evaluation of the impact of deregulation in different industries with a view to assessing trends in telecommunications and analyzing the desirability of deregulation.

In the area of economic development, studies of the supply of computer communications and cable television equipment in Canada were completed during the year. Reports based on these studies are expected to be available in 1983/84, as is an updated edition of the 1981 publication dealing with the supply of telecommunications equipment.

Statistical reports on purchases and sales of these types of equipment in Canada were compiled from surveys carried out during the year and should be publicly available during 1983/84.

The department also completed a series of studies dealing with the marketing strategies of telecommunications equipment manufacturers on the world scene. A publication on this subject is to be released in 1983/84.

Communications statistics

Collecting and organizing statistics on the communications sector is a continuing activity within the department.

Departmental data bases on radio, TV, cable television and the telecommunications carriers were brought up to date during the year.

In co-operation with Statistics Canada and the CRTC, the department developed new data bases on broadcasting program production and program content. Preliminary work was also done on a statistics framework for the communications sector.

The Canadian Information Processing Society time-series data base is now being maintained by the department. Current information was added during the year, and associated documentation was produced on computer communications, the office of the future and other new informatics services. In addition to maintaining these data bases, the department made special efforts to encourage wider use of the statistical software programs it has developed and to improve access to its statistical information. Numerous statistical reports were produced, and statistical information was provided to many agencies and individuals in response to their requests.

Managing the Radio Frequency Spectrum

6

All radio services, including broadcasting, radar, satellite systems and mobile radio, depend on a limited resource -- the radio spectrum.

Spectrum management is the planning and application of technical rules and regulations to ensure that all radio services operate satisfactorily and without interference.

Under the Radio Act, spectrum management is the responsibility of the Department of Communications. Specific management activities include:

- licensing and controlling the use of mobile radio systems, amateur stations, GRS (CB) radio stations and microwave stations;
- developing standards for radio equipment;
- testing and approving radio apparatus for use in Canada;
- establishing operating procedures;
- conducting examinations for radio operators; and
- issuing technical and operating certificates for broadcasting stations.

Licensing and control are key functions in spectrum management. Most radio transmitters in Canada must be licensed, and certain categories of radio operators have to be certified. This ensures that radio transmitters are operated properly, on assigned frequencies, according to established technical standards and procedures. The department uses advanced computer systems and employs inspectors throughout Canada to issue licences and make sure that the conditions attached to licences are respected.

Licensing

Among the services for which the radio spectrum is used are business, safety and emergency, and experimental communications. In spite of the restrained economy, the number of licences in this category increased by 8.2 per cent during the year to achieve an all-time high of 596,185. This upward trend is expected to continue.

The radio spectrum is also used by the public for personal communications in what is known in Canada as the General Radio Service or GRS (CB is the American equivalent). As of March 31, 1983, there were 439,027 GRS licences in force, a drop of 24 per cent from the previous year. The number of GRS licences has been decreasing steadily since 1978/79, when it approached the one million mark. GRS licensing has been automated so that it now requires a minimum of administration by the department. Appendix VIII illustrates the number of licences in force in each year since 1972/73.

The use of radio must also be co-ordinated at the international level. In 1982/83, the department co-ordinated 4,392 terrestrial frequency assignments with the International Frequency Registration Board (IFRB), which is responsible for international radio frequency spectrum management. Ninety-eight assignments for domestic earth stations and one assignment for a space station were also co-ordinated with the IFRB.

In addition, the department studied 7,368 frequency proposals from foreign countries, mainly the United States, to ensure that the proposed stations would not interfere with Canadian stations, existing or planned, and co-ordinated with foreign agencies a total of 5,757 frequencies to be assigned in Canada.

In addition, the department investigated 78 inter-station interference complaints during the year involving Canadian and foreign radio stations.

Radio regulation

The department issues regulations, rules, procedures and standards to ensure the orderly use of the radio frequency spectrum.

Public consultation is an essential part of this process. After consultation with the communications industry, the department drafts proposed regulations and other documents, announces them in the Canada Gazette, and invites public comment within a specified period. Comments received are considered before regulations are finalized and implemented.

Radio operator task force

In 1982, the department established a radio operator task force to review the role and duties of radio operators, to determine the classes of certificates needed to carry out various radio station operations and to establish the knowledge and experience required to qualify for radio operator certificates.

Public comments were requested on the task force recommendations concerning the classes of certificates to be issued by the department and the certificate required for the operation of each class of radio station. Following examination of comments received by the February 1983 deadline, the department will amend the radio regulations as required to meet current operating conditions.

In the second stage of its review, the task force will examine the knowledge and experience requirements for each class of radio operator certificate.

Changes in regulations

Amendments made to the General Radio Regulations in 1982/83 included the following:

- Cordless telephones operating in the 1.7 MHz band were exempted from licensing.
- The use of frequencies in the 10.1 to 10.15 MHz band was authorized for the amateur service.
- The radio licence fee schedule was revised.

A number of further changes were proposed during the year, and comments were requested on these proposals. Proposed changes included:

- changes to the General Radio Regulations affecting the amateur service, and the General Radio Service;
- changes to the Radio Interference Regulations concerning interference to radio and television reception from AC high-voltage power systems; and
- a draft amendment to Part II of the General Radio Regulations to delete channels 70 to 83 from UHF-TV receivers and thus allow the manufacture and importation of sets receiving only channels 1 to 69.

In addition, a draft regulation on digital radio apparatus was sent out to equipment manufacturers for comment. A revised regulation to define technical certificates, classes of TV stations and requirements for station identification was also prepared for publication and comment.

Spectrum control

Spectrum control activities take the form of investigation, inspection, examination, legal action and the education of radio users not conforming with the radio regulations. Included are inspections of ship installations as required by the Canada Shipping Act.

Typical infringements were unlicensed operation, transmitting at the wrong power or frequency, unauthorized modification of equipment and use of improper operating procedures.

In 1982/83, there were 33,155 radio investigations and 2,174 inspections of ship radio stations. Seventy monitoring assignments were carried out at the request of other government departments; the majority of these concerned interference to existing radiocommunications.

To protect Canadian frequency assignments, 174 infringement reports were issued to foreign countries. Within Canada legal actions for prosecution and forfeiture of radio licences or certificates were undertaken in 29 cases.

Departmental staff maintained contact with GRS clubs, giving talks and presentations at club meetings in many parts of Canada, in order to encourage self-regulation by this large group of radio users.

Broadcasting operations

In the area of broadcasting, the Department of Communications is responsible for analyzing, evaluating and certifying the technical and engineering aspects of all broadcast and cable TV licence applications to the CRTC.

The department also regulates the technical operation of all approved broadcast and cable TV systems in Canada.

During the year, 33 applications were processed for AM radio stations, 117 for FM stations, 397 for TV stations and 804 for cable TV. These included 114 pay-TV applications and 46 applications to distribute Canadian Satellite Communications Inc. (Cancom) signals.

In addition, the department processed 2,430 broadcasting proposals from foreign countries, many from the United States.

To permit additional licences to be granted for low-power television stations receiving programming via satellite, the department developed a table of geographic separations required between low-power and regular UHF-TV frequency assignments and allotments.

Also in the area of UHF-TV, a contract was awarded for tests in the field to determine whether more channel allotments could be made available for UHF stations by sharing some of the antenna sites between several high-power broadcasting transmitters located in densely populated areas.

A study on the use of FM directional antennas was also completed, with a view to providing more FM channels.

A joint Department of Communications/Ministry of Transport Committee on FM/Air Navigation Interference completed its report. The committee's recommendations are now under study by the government. This work is expected to culminate in the development of standards for the interface between FM and aeronautical navigational and communications systems.

Several amendments to procedures and specifications were made during the year.

- An amendment to Broadcasting Procedure (BP) 1 concerning AM image interference was completed.
- A draft revision to Rule 4 concerning FM and TV harmonic interference was prepared.
- A new rule concerning ghosting guidelines for TV is being drafted for publication in the Canada Gazette; it is to be included in BP 1.
- Radio Standards Specification 155 concerning requirements for television broadcasting translators was published for comment in the Canada Gazette.

Teletext

Canadian Broadcast Specification (BS) 14, which outlines the transmission standards to be used for teletext signals, has been adopted by several key organizations in the United States and is becoming the accepted standard in North America.

Teletext is an electronic information technology that turns the home TV set into a data terminal. Viewers select electronic pages of text and graphics from a magazine of information which is encoded in the regular TV signal.

Work was undertaken in 1982/83 to resolve cable TV operational problems associated with this new technology and it is expected that a revised version of BS 14 will be published in 1983/84.

Spectrum engineering

Spectrum Engineering sets the norms and estalishes the engineering standards, practices and procedures for the allocation of radio frequencies. It also fashions the computer tools for the efficient application of such practices and ensures that the radio equipment deployed in Canada meets the standards.

A tentative agreement on cross-border sharing arrangements for terrestrial microwave systems in the upper 4 GHz band was established with the United States in order to permit possible use of this band by the TransCanada Telephone System.

Studies continued on cross-border frequency sharing for cellular mobile radio-telephone systems and on the implications for spectrum sharing of the proposed mobile satellite system (MSAT). Final plans and associated technical and licensing guidelines for conventional mobile radio systems in the 400 and 800 MHz bands were published.

A variety of engineering documents were published during the year, including:

- a supplement to Radio Standards Specification (RSS) 119 and Standard Radio System Plans (SRSPs) 501 and 502 for the 800 MHz band;
- Radio Standards Procedure (RSP) 113 on microwave licensing procedures;
- RSP 114, issue 2 on the licensing procedure for space systems; and

- Telecommunications Regulation Circular (TRC) 52, issue 6, "Application Notes for the Terminal Attachment Program", which provides descriptions of categories and interpretive information concerning parameters and testing methods for terminal devices.

Technical and co-ordination work on draft regulations on power line interference and on digital apparatus was completed. Studies were also undertaken concerning digital mobile radio systems.

In conjunction with the department's Communications Research Centre, laboratory and field experiments were carried out in support of equipment standards and licensing procedures being prepared for amplitude-companded single-sideband land mobile radio systems in the VHF band (150 MHz). These systems use a new modulation technique that is particularly spectrum efficient.

Personal radio

Preparatory work to implement a Personal Radio Service (PRS) in the 900 MHz band continued and discussions were held with the U.S. Federal Communications Commission and other administrations to harmonize the features and characteristics of the new service.

This possible new service for personal and business communications would permit mobile-to-mobile or mobile-to-base communications using a radio channel selected automatically. It could also interconnect with the public telephone network through the base station.

In March 1983, a notice entitled "Policy Proposals for the Implementation of a New Personal Radio Service in the Band 890-960 MHz" was published in the Canada Gazette requesting comments on the development of such a service and its various characteristics.

Spectrum Management System

The computer-based Spectrum Management System (SMS) provides on-line support to departmental field offices in determining the potential for interference to new frequency assignments in the land mobile bands. The system also stores information on all the current radio systems in Canada except for the General Radio Service, prints licences and carries out accounting functions associated with the collection of licence fees.

In the past year, the method used to determine potential radio frequency conflicts was modified and upgraded so that analysis could be performed automatically, and a system for automatic frequency selection was implemented.

The Spectrum Management System was also used to verify the levels of use of the land-mobile frequency bands to ensure maximum frequency utilization.

Design work was undertaken to integrate systems used to analyze interference in the microwave services with a central data base. Design work was also begun to provide expanded interference analysis for microwave services such as terrestrial systems, earth stations and fixed satellite systems. This activity was undertaken to meet new regulations established by the International Telecommunication Union and to improve the domestic and international frequency co-ordination process which is becoming particularly important due to increased demand for microwave services.

The department is continuing its initiative, begun in 1981, to use microcomputers as a means of increasing the efficiency of certain operations. In one such project, the department is using microcomputers to establish and maintain a radio equipment list containing information about type-approved and type-accepted radio equipment in Canada. Other projects involve the use of microcomputers to perform selected internal administrative functions.

Equipment approval activity

Based on submissions from industrial laboratories and from the department's own laboratory, the equipment approval unit located at headquarters certified 447 models of radio equipment.

During the year, the department's engineering laboratory tested 82 models of radio equipment for type-approval or technical acceptability according to standards established under the Radio Act.

The engineering laboratory also tested 231 models of equipment under the terminal attachment certification program. Based on the results of the laboratory testing, the department certified 144 models of equipment.

Engineering laboratory

As well as its activities relating to type-approval, the laboratory audit tested 53 units of radio equipment to ensure that units currently produced continue to meet established standards. The laboratory also carried out work in the area of electromagnetic interference and electromagnetic compatibility and provided spectrum monitoring support to headquarters and the regional and district offices.

Other functions of the laboratory include developing methods for testing equipment, and calibrating and overhauling equipment used by the department for testing.

In addition, the laboratory administers data-gathering operations at Resolute Bay, N.W.T., Churchill, Manitoba, and Ashton, Ontario. Stations at these locations monitor the ionosphere over Canada 24 hours a day by transmitting radio waves into the ionosphere and recording the return echoes on film.

The data obtained is used in ionospheric research and also serves as a basis for making predictions related to high-frequency radio operations. It is analyzed and provided on a real-time basis to defence authorities as well as to an international network for information exchange, the World Data Centre for Ionospheric Information in Boulder, Colorado.

Data is also published monthly and provided on a subscription basis to Canadian and international subscribers in the United States and 23 other countries.

Government Telecommunications

7

The federal government is the largest user of telecommunications in Canada. Telecommunications expenditures by federal departments and agencies exceed $450 million annually.

More than 80 federal departments and agencies take advantage of the shared systems managed by the Government Telecommunications Agency (GTA), a branch of the Department of Communications. This common service organization, with 14 offices across Canada, plans, establishes and manages cost-effective telecommunications services and facilities for the government. Costs are recovered from departments based on usage.

Services to departments

Six major services are available through GTA: local telephone services, the intercity telephone network, shared data communications, customized telecommunications services, consulting, and directory services.

The agency manages 27 consolidations or local networks; 25 of these are in Canada, while two are in the United States, in New York and Washington. The possibility of establishing a larger consolidation at Nanaimo, B.C., is being investigated with a view to providing better service and introducing a system for recording all call details. New consolidations are nearing completion for Penticton, B.C., and for the Government of Canada building in Scarborough, Ontario.

Effective April 1, 1982, GTA implemented a co-ordinated procurement plan. The circuitry that had been individually maintained by National Defence, Transport Canada and the Atmospheric Environment Service was added to the facilities which GTA leases in bulk from the telecommunications carriers.

The effect was to increase the number of channels between centres managed by GTA and reduce the cost per channel. The co-ordinated procurement plan saved a total of $1.8 million in government telecommunications expenditures during 1982/83.

GTA manages one major shared data service, the Government Data Network, which is a low-speed store-and-forward message service carrying mainly teletype traffic. The agency also offers an audio teleconferencing service. This is experiencing increased use as departments substitute teleconferences for more expensive face-to-face meetings.

Improved telephone service

Government telephone service in the National Capital Region is being modernized using 100 per cent Canadian digital switching equipment. Under an agreement reached between GTA and Bell Canada in November 1982, Enhanced Exchange Wide Dial (EEWD) service will be introduced to government telephones in the National Capital Region.

This represents a major step towards upgrading the federal government telephone service in Ottawa and Hull to state-of-the-art digital technology. It will result in improved internal communications, and will enable the federal government to provide bettter service to the public.

The plan for the National Capital Region includes the installation of one SL-100 in Hull and two SL-100s in Ottawa. This will provide federal government users with significant improvements in the switching, transmission quality and reliability of intercity services starting in January 1984.

Local improvements such as call transfer, consultation hold and three-party conference will be phased in from January to September 1984.

By the last quarter of 1985, reconfiguration of all EEWD telephone systems should be complete for the whole of the National Capital Region. At that time the full range of EEWD station features, including touchtone and call forward, will be available.

The plan will affect approximately 90,000 federal government users in the Ottawa/Hull area. GTA is proceeding with similar plans in other regions.

Planning for the future

During the year, GTA was engaged in planning directed towards the development of new services the agency could offer and towards the enhancement or modernization of existing services. An indication of some of the current planning and development work is given below.

Office communications

Organizations throughout the federal government are in the process of automating their business communications or are thinking of doing so. These initiatives have in common a requirement for the exchange of non-voice information and for new forms of communication between offices. To meet these government-wide needs, GTA is developing plans for new or improved networks and services in the following areas of application.

Text communications

To facilitate communication of textual material such as reports, letters and other correspondence, GTA is currently developing an initial service that would permit users to exchange text between communicating word processors with only minimal additions to their present equipment. The network would interconnect micro-computer systems, personal computers and a variety of electronic communication terminals.

Electronic messaging

Another government-wide need recognized by GTA is the requirement for non-voice communication by electronic means.

To evaluate the various common carrier services in these areas, GTA introduced on a trial basis a Government Electronic Messaging System based on the TCTS Envoy 100 system. GTA is also investigating the feasibility of conducting a similar trial with CNCP's Electronic Office System.

Teleconferencing

In conjunction with user departments and the common carriers, GTA set up teleconferences between the Atlantic provinces and the National Capital Region to demonstrate and evaluate the application of enhanced audio teleconferencing using state-of-the-art audio conference bridging equipment, slow-scan TV and Telidon technologies. Based on the users' responses and its own evaluations, GTA is proceeding to introduce improved audio teleconference services in various regions.

Satellite communications

A pilot project in satellite communications was completed by GTA in co-operation with CNCP Telecommunications. The purpose was to evaluate a roof-top to roof-top satellite communications network for a variety of government communications applications. A second satellite-network field trial with TCTS is underway. Both projects involved several government departments as users of the networks.

The post-trial evaluation of the first pilot project and other studies by GTA indicate that satellite networks could be used to good effect to extend existing GTA network services to remote areas and to enable government users to achieve considerable savings on certain long-distance business communications.

To follow up on these projects, GTA is co-operating with the telecommunications common carriers to investigate the development of a government satellite business communications network. This would tie in with the existing government intercity telecommunications network and would integrate voice, text and data communications.

During the year, GTA published the sixth edition of the Annual Review of Telecommunications in the Government of Canada. This document serves as a planning tool that government organizations can use in shaping their proposals for future telecommunications. The sixth edition focusses on accomplishments in reducing telecommunications costs and potential for further cost reductions.

Administrative policy

GTA supports and promotes the use of the most cost-effective telecommunications services in the federal government by developing and recommending policies, directives and guidelines. GTA also publishes circular letters to departments to offer advice on the efficient and effective management of their telecommunications resources.

In 1982, GTA developed and produced a Telecommunications Management Manual. This manual summarizes the fundamental principles, policies and procedures of telecommunications management in the federal government and is intended as an aid to telecommunications personnel in the government.

Federal-Provincial Relations

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In order to advance the federal government's interests in communications and culture, the department undertook a wide range of activities with the provinces including information exchange and co-operative projects as well as consultation and negotiation on policy and program matters. Work was also begun on the development of a regional dimension action plan aimed at promoting greater regional involvement in the department's policy process.

Communications ministers' meeting

On May 21, 1982, a Federal-Provincial Conference of Communications Ministers was held in Calgary to discuss pay television and the progress of the task force on joint regulatory mechanisms established at the ministers' direction in 1981. Other broadcasting and telecommunications issues were discussed, including the status of bilateral discussions with the United States on telecommunications services and Telesat's lease of spare capacity to the United States.

Consultative committees

Telecommunications and broadcasting issues of interest to the provinces and the federal government were considered by the three federal-provincial consultative committees which met a total of six times during the year. These bodies, the British Columbia, the Prairie, and the Atlantic Consultative Committees on Communications, bring provincial representatives together with regional and headquarters officials from the department and the CRTC to exchange information.

Departmental officials also met several times with representatives of the provinces of Ontario and Quebec to discuss such issues as cellular mobile telephone systems, satellite broadcasting and microelectronics.

Culture and historical resources

On May 4, 1982, a Federal-Provincial Conference of Ministers of Culture and Historical Resources took place in Regina. The ministers reviewed a variety of topics including the progress of the work of the Federal Cultural Policy Review Committee, indemnification of major exhibitions, international cultural relations, the Special Program of Cultural Initiatives, and matters relating to copyright and archives.

Co-operative ventures

Federal-provincial co-operation in the field of communications encompasses a diverse range of activities, from bilateral programs such as the Anik B satellite pilot projects and Telidon field trials to unique multi-organization undertakings such as the Elie-St. Eustache fibre-optics trial in Manitoba. Following the conclusion of the program of television pilot projects on Anik B, the federal government transferred to local and provincial or territorial authorities the small earth stations used in direct-to-home broadcasting trials in Ontario, British Columbia, the Yukon and the Northwest Territories.

A conference on office automation was held October 4 and 5, 1982, bringing together representatives of industry and the federal and provincial governments. Subsequently, the department established a clearing-house to receive material respecting studies or projects from all sources and disseminate information in this area to the provincial governments.

International Relations

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Worldwide communications systems and services depend on 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 global telecommunications,
- promotion of technological co-operation,
- regulation of telecommunications services,
- radio spectrum management, and
- international cultural affairs.

International Telecommunication Union

International telecommunications are co-ordinated and regulated by the International Telecommunication Union (ITU), a United Nations specialized agency.

During 1982/83, Canada continued to hold a seat on the ITU Administrative Council, which directs the affairs of the union in periods between Plenipotentiary Conferences.

The council met in Geneva in April and May 1982 in its 37th session. Principal issues considered were the Administrative Council's report to the Plenipotentiary Conference scheduled for the fall of 1982, the enhanced computer capability of the International Frequency Registration Board (IFRB), the program of future ITU conferences and meetings, the future of technical co-operation activities, and budgetary and personnel matters.

Plenipotentiary Conference

The ITU Plenipotentiary Conference took place in Nairobi, Kenya, September 28 to November 6. More than a thousand delegates from 147 countries participated. Canada was represented by a delegation of 11 people, including nine from government and two from the telecommunications industry.

Last held in Spain in 1973, the Plenipotentiary Conference sets the general policies of the union and determines the rights and obligations of its members.

Plenipotentiaries at the 1982 conference revised the convention governing the ITU's administrative operations and elected various officers, including a new secretary-general and deputy secretary-general. An official from the Canadian Department of Communications was elected to the International Frequency Registration Board; he will serve in Geneva until 1989. New members were also elected to the Administrative Council.

At the conclusion of the conference, the Canadian delegation signed the final acts (taking certain reservations concerning the budget of the ITU) containing the text of the new International Telecommunications Convention (Nairobi 1982). This convention will come into force January 1, 1984.

World Communications Year

By proclamation of the United Nations, 1983 is World Communications Year and the ITU is acting as the lead agency.

The theme of World Communications Year is the development of communication infrastructures, a theme that calls attention to the importance of communications and emphasizes the needs of less developed nations.

In Canada, a national steering committee chaired by the Department of Communications developed a special program of activities. This was announced by the Minister of Communications in February 1983.

Administrative radio conferences

The ITU has scheduled four World Administrative Radio Conferences (WARCs) to take place during the 1980s. These deal with mobile services, shortwave broadcasting and space services.

A number of Regional Administrative Radio Conferences have also been scheduled. Two of them, one on the broadcasting satellite service and the other on AM broadcasting in the medium frequency band, are of particular interest to Canada.

Two other conferences that will deal with the use, mainly in Europe, of the medium frequency band by the maritime mobile, maritime radionavigation and aeronautical radionavigation services may have an impact upon the use of the band in Canada.

Mobile services

During the year, Canada completed its preparations for the WARC on mobile services which was held in Geneva in March 1983.

The most important achievement of the conference was the establishment of a regulatory environment that will permit the testing and development of a global maritime distress and safety system. This system is expected to improve the effectiveness of distress alerting.

Shortwave broadcasting

The first session of the WARC for planning the high frequency bands used for shortwave radio broadcasting is scheduled for January 1984.

This conference is of great importance to Canada, particularly to Radio Canada International (RCI) which broadcasts in 11 languages to Eastern and Western Europe, North and South America, and Africa. Currently, the high frequency broadcasting bands are very congested, and RCI faces increasing costs just to maintain its existing service.

During 1982/83, Canada entered the final phase of its preparations for the first session of the conference.

Canada is pressing for free and equitable use of the high frequency broadcasting bands and is recommending that planning be based on broadcasting requirements rather than on frequency requests, the method currently in use. Frequency assignments to satisfy requirements would be determined through use of a detailed computer program to be developed at the conference.

Space services

For two years, Canada has been preparing for the WARC on the use of the geostationary-satellite orbit and the planning of the space services using it. This conference will be held in two sessions, one in 1985 and the other in 1988.

The decision to hold a conference on space services was made at the 1979 World Administrative Radio Conference. The developing countries strongly supported a conference "to guarantee in practice, for all countries, equitable access to the geostationary-satellite orbit and the frequency bands allocated to the space services utilizing it." They fear that the large number of geostationary satellites currently in use by the developed countries and the existing regulatory regime of "first-come, first-served" could preclude the future availability of orbit positions to meet their own needs.

Region 2 broadcasting-satellite service

A regional conference is to be held in early summer 1983 to plan the broadcasting-satellite service in Region 2, the Americas. Participants will allocate orbit locations and establish a frequency assignment plan for the 12 GHz band that could remain in use beyond the end of the century.

Due to the diversity of opinions on how the band should be shared, Canada held lengthy and detailed negotiations with concerned administrations, during preparations for the conference within the 1982/83 year. In addition to several meetings with U.S. officials, there were extensive meetings with Latin American countries in order to ensure that Canadian proposals to the conference were compatible with the interests of the United States and that they accommodated the needs of the Latin American countries.

AM broadcasting

A Regional Administrative Radio Conference to plan the broadcasting service in the newly allocated (1979) frequency band 1605-1705 kHz in Region 2 is scheduled to be held in two sessions, in 1986 and 1988. Canadian preparations for this conference will begin in 1983/84.

Other regional conferences

Two other regional conferences are of interest to Canada.

One of these is the conference on maritime radio beacons in the European maritime area, scheduled for March 1985. The outcome of this conference will affect this country, since much of the world's commerce is handled through the North Atlantic shipping lanes, and ships from Canada will need to comply with changes made to maritime radiobeacons in Europe.

Another conference that could affect Canadian interests is the conference on maritime mobile service and aeronautical radionavigation service in Region 1, which is scheduled to be held in 1985.

It will be necessary for Canada to continue to survey developments in both these areas to ensure that operational concerns are protected.

International consultative committees

Much of the technical work of the ITU is carried out through two consultative committees, the International Telegraph and Telephone Consultative Committee (CCITT) and the International Radio Consultative Committee (CCIR).

The CCITT studies technical, operating and tariff questions relating to telegraphy, telephony, data and telematic services, while the CCIR studies technical and operating questions relating to radio communications. Both committees issue recommendations on matters within their purview. The basis for their work is provided by a wide range of studies in which governments, private operating agencies, and industrial and scientific organizations participate.

In 1982 CNCP Telecommunications became a member of the CCITT/CCIR, joining other Canadian members: Teleglobe, Spar, Telesat, the CBC, Marconi, Memotec, TCTS and BNR.

CCITT

In the CCITT, the year was an active one since the committee was at the midpoint of its study cycle of four years. All study groups met at least once, identified experts to carry out specific tasks and made good progress in their work plans.

Standardization of the evolving new services, such as teletext, videotex, and store and forward telex, was an important focus of CCITT efforts during 1982/83. Canada is one of the major contributors to this work. A technical expert from CNCP Telecommunications was chosen to direct the CCITT study on standardization to permit the interworking of teletex and telex. CNCPT hosted an international meeting in Montreal on this topic in October 1982.

In the area of videotex standards, such as Telidon, Canada and the United States came to an agreement on the North American presentation level protocol syntax standard which will differ from the European standard. Through the work of the CCITT, they have encouraged the concept of a global super-standard for videotex that would allow the contents of videotex data bases built to different standards to be shared by users throughout the world. A series of meetings of experts has been scheduled for 1983 to achieve such a standard.

Canadians were very much involved in other CCITT work programs dealing, for example, with open system interconnection, integrated services digital network, modem standards, and terrestrial and satellite transmission requirements.

CCIR

Most of the international study groups were involved in a meeting to prepare for the ITU Regional Administrative Radio Conference on the broadcasting-satellite service in Region 2. Canadian preparation for this meeting was extensive, involving bilateral meetings with a number of countries. The resulting report should provide a sound technical basis for the ITU Regional Conference and at the same time support Canada's proposals.

Within Canada, the national organization for CCIR work was overhauled to reflect decisions made by the plenary assembly in February 1982 as well to achieve better co-ordination among the Canadian study groups.

UNESCO

The preparation for the UNESCO Second World Conference on Cultural Policies (MONDIACULT) held in August 1982 in Mexico City was co-ordinated by the Department of Communications. Canada's delegation included officials of the department.

At the conference, Canada succeeded in persuading participants to interpret their terms of reference so as to include such important cultural themes as heritage, cultural identity, new technologies and the role of youth and women.

Canada, again with representation from the Department of Communications, also participated in the fourth extraordinary session of the UNESCO General Conference which approved UNESCO's second medium-term plan covering the period 1984-1989.

Canada continued to participate in meetings of the 35-member council of UNESCO's International Programme for the Development of Communication (IPDC), established in 1980 to provide practical help in meeting the communications needs of developing countries.

INTELSAT

The International Telecommunications Satellite Organization (INTELSAT) held an assembly of parties in Washington, D.C., in October 1982. The Canadian government was represented by officials from the departments of Communications and External Affairs and from Teleglobe Canada.

Among the issues dealt with was the proposal by Canada and the United States of America to use their respective domestic satellites for public telecommunications services between the two countries. This proposal was submitted to INTELSAT for consultation following an exchange of letters between the two countries in August 1982 concerning transborder services.

The joint proposal was found to be technically compatible with the INTELSAT system, not to cause significant economic harm to the global system, and not to preclude the use of INTELSAT links between the two countries. It was approved subject to renewed consultation with INTELSAT in 1987.

Commonwealth Telecommunications Conference

Canada was among the participants in the Commonwealth Telecommunications Conference held in Nicosia, Cyprus, in November 1982. The head of Canada's delegation, the assistant deputy minister of communications responsible for spectrum management and government telecommunications, was elected vice-chairman of the conference.

A new financial agreement was established for the Commonwealth Telecommunications Organization, to take effect April 1, 1983. It gives partner governments greater flexibility to respond to changing economic and technological factors. It will also be less expensive to administer. In addition, it provides for co-operation between partner governments in training personnel, and in the exchange of information and ideas.

International aspects of informatics

Governments throughout the world are uncertain about the full implications of microelectronics technologies, and their rapid spread to new areas of application. They are aware of the broad range of potential benefits, but at the same time many are concerned about the possibility of negative economic, social, legal and political impacts.

Growing international recognition of the importance of these new technologies, and of the need for appropriate public policies to deal with the new challenges and opportunities, was demonstrated by the establishment of a committee in the Organization for Economic Cooperation and Development (OECD) to deal with information, computer and communications policy. Among the issues covered by the new committee are:

- impacts on productivity and employment;
- trade in telecommunications and computing services;
- changing market structures in the provision of telecommunications services; and
- vulnerability of the computerized society.

Canada continues to give strong support to OECD work in this area, and the Department of Communications provides the international chairman of the Expert Group on Transborder Data Flow.

The department also provides a member of the panel of experts advising the United Nations Centre on Transnational Corporations in its work on transborder data flow. Three current areas of study are: remote sensing by satellite; case studies of the responses to transborder data flow issues in various countries; and access by developing countries to the international data market, and the relevance of existing services to their needs.

The changing nature of international trade is of increasing interest to governments throughout the world, and work on trade issues is underway in a number of organizations both national and international. The department provided input on trade in telecommunications and computer services to the Interdepartmental Task Force on Trade in Services (chaired by External Affairs) in preparation for the November 1982 GATT Ministerial meeting, and participated in OECD projects on trade in high technology products and trade in services. Within Canada, the department contributed to the inter-departmental review of Canadian trade policy initiated by External Affairs.

In this period of rapid change, the department is monitoring developments in other countries, as well as promoting Canadian interests in international bodies active in the area of informatics. The inherently international nature of telecommunications underscores the importance of taking into account the evolution of international agreements when developing domestic informatics policies.

Bilateral relations

Considerable bilateral activity took place with foreign countries that represent potentially important markets for the Canadian telecommunications and cultural industries. A number of bilateral visits and activities co-ordinated by the department have resulted in or contributed to concrete business ventures.

The United States

Canada's relationship with the United States in the fields of communications and culture is among the most complex and sophisticated in the world. Periodic consultations between high-level communications officials of the two countries were initiated in 1980 to allow for informal discussion of current issues before they become major irritants. The second set of such consultations took place in May 1982 in Washington, D.C.

France

In October, Communications Minister Francis Fox travelled to Cannes to deliver a speech at Vidcom '82, the International Videocommunications Congress, and to propose the creation of a world super-standard for videotex. While in France, he met with the Ministers of Culture and Communication to discuss co-operative cultural and audio-visual programs.

This meeting was followed by the visit to France in January 1983 of a Canadian delegation led by the Senior Assistant Deputy Minister of Communications to discuss details of these initiatives.

Algeria

Contacts with Algeria increased considerably during the year. The second meeting of the Canada-Algerian Joint Commission, held in Algiers in April 1982, identified communications as a priority area for technical co-operation between the two countries.

In this context, the Minister visited Algeria to discuss co-operative telecommunications projects and an agreement between the CBC and the Algerian broadcasting authority. A letter of understanding was signed in November covering the financing of co-operative projects by the Canadian International Development Agency.

In February 1983, the Algerian Minister of Higher Education and Scientific Research visited Canada to conclude an agreement for scientific and technical co-operation. Subsidiary agreements are expected to follow covering specific exchange programs between the two countries.

Others

Federal and provincial parliamentarians from the Federal Republic of Germany came to Ottawa to study the use and implications of new information and telecommunications technologies and to learn about Canadian regulatory policies in this area. One of the visitors was subsequently named Minister of Posts and Telecommunications.

The Brazilian Minister of Communications paid an official visit to this country to study the Canadian space program and space industry.

The British Minister of State for Industry and Information Technology held discussions with the Canadian Minister of Communications on videotex, cable and fibre optics.

Two groups from Denmark visited Canada. The first, a group of senior communications policymakers, came to study Canadian experiences, policies and plans regarding mass media and new telecommunications technologies. The second group was a delegation from Danish telephone companies, radio and TV broadcasting, the electronics industry and technical universities which held discussions with the public and private sectors concerning videotex, satellites, fibre optics and broadcasting.

The Minister of Communications met with the Minister of Information, Posts and Telecommunications for Zimbabwe to discuss Canadian capabilities in various sectors including the manufacture and installation of earth stations and telephone distribution systems, providing support to bids by Canadian companies.

The Minister also held discussions with the Greek Minister of Research and Technology concerning Canada's expertise in establishing telecommunications systems.

A delegation from the Japanese Council for Science and Technology visited the department to explore the Research Sector's activities.

Marconi year

Eighty years ago, Guglielmo Marconi made the first trans-Atlantic wireless transmissions. The Department of Communications played an important role in helping organize the many events during 1982 that marked this anniversary.

On December 15, the Governor General of Canada and the President of Italy exchanged messages by satellite in a modern re-enactment of the establishment of radio communications between North America and Europe in 1902. The inventor's daughter, Gioia Marconi-Braga, was present at the ceremony.

Cultural affairs

Cultural affairs were the subject of numerous official talks in which the department took part during 1982/83 with Australia, Belgium, the Federal Republic of Germany and the Netherlands. During a visit to Canada, the Italian Minister of Culture met with the Minister and officials of the department and cultural agencies to study Canadian cultural policies and programs, as did the Icelandic Minister of Culture.

Highlighted during these visits were Canadian computer systems such as the Canadian Heritage Information Network (CHIN) of the National Museums of Canada, the Intelligent Network (iNET) gateway trial of the National Library of Canada and the department's Canadian Record Catalogue. These systems were enthusiastically hailed by the foreign visitors as examples of new Canadian technologies being applied to the requirements of cultural programs.

Regional Operations

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A network of district and sub-district offices located in all areas of the country provides the focal point for most of the department's direct contact with the public. This public includes radio users, suppliers, manufacturers, universities, the media, artists and performers, as well as supporters of the artistic community.

The department's regional activities are administered through five regional centres located in Moncton, Montreal, Toronto, Winnipeg and Vancouver.

Given the diversity of its operations, it is probably true to say that all Canadians are affected in one way or another by the activities of the department. This is reflected by a growing demand from the public for assistance in all areas for which the department has responsibilities, whether they be related to telecommunications, broadcasting, new information technologies or the arts.

Spectrum management

Canadians today use the radio spectrum or benefit from it in a myriad of ways. Broadcasting and cable television; satellite and microwave for long-distance communications; mobile communications for airlines, police forces, ambulance services, marine navigation, and dispatch of construction, maintenance and delivery services -- all have essential requirements for spectrum utilization. In addition, CB radios, portable telephones, garage door openers and remote controls of many types are becoming more common.

With the continuing increase in radio spectrum usage by Canadians, the task of ensuring electromagnetic compatibility between current systems and those seeking access to the spectrum is becoming ever more challenging. In order to achieve compatibility between systems, the department's regional offices provide advice and guidance to potential users of the radio spectrum in selecting appropriate services to meet their communications needs. Such consultation usually results in the submission of formal applications for spectrum assignments.

In the licensing process, the regional offices assess the eligibility and compatibility of proposals in the context of the existing electromagnetic environment, using a nation-wide computerized data base to model the impact of the proposal. Once applications are approved, radio licences are issued. To help maintain proper radio operating discipline, people wishing to use many types of radio service are required to take radio operator examinations set by the department.

Certificates of proficiency as radio operators are issued to successful candidates.

An essential aspect of spectrum management is ensuring that the radio frequencies are properly and effectively utilized. For this reason, the department, through the regional offices, inspects radio installations and monitors the use of the airwaves. This activity helps the department to identify and eliminate potential sources of interference, and enables it to maintain an accurate licensing data base against which new proposals can be evaluated.

Service to spectrum users and the general public is also provided in the form of interference investigation and technical advice.

On behalf of the Ministry of Transport, the department's regional staff inspect radio installations on board domestic and foreign ships and issue safety certificates in accordance with the requirements of the Canada Shipping Act and the Safety of Life at Sea Convention.

Other activities

The regions are making a significant and increasing contribution to the overall work of the department, participating in the development of policies as well as the delivery of programs. This intensified regional involvement reflects the priority which the government attaches to increasing the regional sensitivity of federal economic development policies and programs.

Furthermore, through its regional structure, the department is extending full co-operation to the Federal Economic Development Co-ordinators in each province and contributing to regional economic development through growth in the communications sector.

Regional staff represent the department at major events across the country and contribute to making Canadians more aware of the opportunities created by new technologies in communications. A recent example was World Communications Year. The regional offices distributed information and helped to organize several major projects for this international year organized under the auspices of the International Telecommunication Union.

Requests to regional offices for information and assistance relating to the various programs of the department and the agencies dealing with arts and culture increased dramatically during 1982/83. The involvement of the regions in this manner has contributed greatly to the department's sensitivity to the special characteristics of each area of the country.

The regions have also been active in planning for emergency telecommunications, in line with the responsibilities incumbent on the department under the Emergency Planning Order of 1981.

Finally, telecommunications services to federal departments and agencies across Canada are managed through the department's regional and district offices. Included are consultation services provided to the federal departments located in each region to assist in the efficient and cost-effective matching of client needs and current technology, maintenance of government listings (blue pages) in public telephone directories, and assessment of the usage made of shared networks for billing purposes.

Special Services

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Public information programs

It is the policy of the Government of Canada that Canadians in all regions have the right to full, accurate and timely information, in compliance with the Official Languages Act, about their government so they can exercise their rights of citizenship and take part in the democratic process fully, responsibly and in an informed manner.

In the Department of Communications, information activities that promote national and international public awareness and understanding of the policies, programs and activities of the department are carried out by all branches and regional offices with support from the Information Services division.

The division plans and implements public information programs on behalf of the department as a whole, and provides a support function for the communications activities of other branches in areas such as advertising, media relations, publishing, development of audio-visual, exhibit and training materials, research, writing and editing. The division also assists the Department of External Affairs in international information activities and contributes to internal communications within the department through vehicles such as the employee newsletter Modulation which was replaced by Communications Express in March 1983.

During 1982/83, the department published 86 news releases, 67 speeches, 18 fact sheets, and a large number of other articles and publications, ranging from cultural heritage brochures and posters to Communications Research Centre technical notes. New audio-visual presentations using videotape, sound-slide and Telidon graphics technologies were prepared for internal use, public exhibition and national and international marketing programs. The department participated in regional and national exhibitions, and supported Canadian industry at international conferences and trade shows.

Special initiatives during the year included planning and implementation of a public information program to raise public awareness of goals and activities of World Communications Year. Arrangements were made for the Minister of Communications to give a televised address to the nation regarding World Communications Year on New Year's Day. The department obtained support under Employment and Immigration Canada's New Employment Expansion and Development program to hire short-term employees to design, implement and support local, regional and national World Communications Year exhibits and special programs.

A special project office was established to plan the department's participation in Expo 86, the Vancouver World Fair which will have transportation and communications as its themes. Plans were reviewed and work begun for the department's participation in Telecom '83 in Geneva, the quadrenniel world conference and trade show of the International Telecommunication Union. The division also conducted a feasibility study and began planning for an integrated departmental briefing centre and speakers bureau and a modular exhibit system to support national and regional activities.

Publications

During the year the department produced 42 publications including technical notes, newsletters, behavioural and scientific research reports, and policy proposals such as Towards a New National Broadcasting Policy. Among the most important were Spacebound a history of the Alouette and ISIS satellite programs; The Electronic Office in Canada a discussion paper and Office Communications Systems and Services a catalogue of Canadian suppliers of advanced office equipment produced for the Office Communications Systems Program; From Alouette to Anik and Beyond a booklet marking Canada's 20th anniversary in space, Telidon Behavioural Reports 9 and 10, and a number of cultural research studies, including Cultural Facilities: Oversupply and Undersupply, Culture in Canada: Issues and Attitudes, Canadian Freelance Writers, Profile of Visual Artists in Canada, and Simply Dance. Publication of In Search, the departmental magazine, was terminated as a restraint measure.

Exhibits and audio visual services

High priority was given to the development of new audio-visual documents and exhibit materials to support the information activities of the department's regional and district offices at seminars, conferences and public exhibits such as the Vancouver Boat Show. New information materials were prepared to reflect the integration of the Arts and Culture branch with the department. New audio-visual documents included Footprints from Space describing the Anik B field trial program; Canada in Space a videotape used to market Canadian space technology in international markets; a special Telidon presentation for Unispace 82 describing the history of the Canadian space program and listing Canadian space product and service suppliers; a special Telidon presentation for the CanTel data base of the Task Force on Service to the Public to explain the regulations of the General Radio Service; and

Keeping in Touch, a videotape describing the activities of the Department of Communications; The Communications Research Centre: Bringing Canadians Closer Together a sound slide show on the CRC; SARSAT: Satellite Aided Search and Rescue, a slide show which describes the department's role in this program; David Florida Lab an interactive videotape in both popular and technical versions which presents a video tour of Canada's space testing facility. Work was begun on The Challenge of Communications, a videotape describing the activities of all sectors of the department, and At the Sound of the Tone, which will be used to familiarize federal government employees with the operation of the Government of Canada's new Enhanced Exchange Wide Dial telephone services.

In conjunction with other branches of the department, the division provided planning, technical and public relations support to Canadian companies in a number of important international trade fairs, exhibitions and conferences, including exhibits at Videotex '83 in New York, Vidcom in Cannes, and the Unispace conference in Vienna. Canadian companies and other government agencies were also invited to provide exhibits for a special ceremony held in the David Florida Laboratory in September 1982 to mark the 20th anniversary of Canada in Space. Guests included pioneers of Canada's space program, Members of Parliament and Senators, representatives of the media and diplomatic community. The ceremony also marked Canada's official acceptance of an invitation from the U.S. National Aeronautics and Space Administration to train Canadian astronauts for U.S. space missions.

Personnel statistics

As of March 31, 1983, there were 2,248 employees in the Department of Communications. Of these 63 per cent were men, and 37 per cent women. By language of work, 60 per cent were English-speaking and 32 per cent were French-speaking. Further breakdowns are given in the appendices.

Through special employment programs, the department hires native people and those with handicaps. At year-end, there were three native persons and 11 handicapped on strength.

Security and communications support services

The Security and Communications Support Services Branch has a department wide mandate which includes regional and district offices, to provide a protective shield for departmental activities through the development, implementation and monitoring of security safety and fire prevention policies and programs. In addition, the branch provides a support service to other government departments for communications-electronic security and ensures the continuity of telecommunications services for government, industry and public needs during peacetime or wartime emergencies.

The Security Programs and Operations Division is basically an internal service responsible for ensuring that personnel, material and information assets employed in or used by the department are provided adequate protection. The services provided in 1982/83 include security clearance of personnel, access control, surveys of facilities, evaluations of systems, analysis of information sensitivity, investigation of loss or damage to property, training and education of employees and development of departmental security and safety policies. These services were effected through direct contact with employees and management staff and through management and planning committees.

The Communications Support Services Division is basically an external service supporting the work of other departments and agencies by providing for security of information while it is being processed or telecommunicated and ensuring that the telecommunications and broadcasting resources of Canada are postured to meet emergency needs of government, industry and the public. Specific activities in which Communications Electronic Security (COMSEC) staff were involved during 1982/83 were the design of protected telecommunications systems for several departments; inspections and evaluations of electronic data processing facilities in conjunction with the RCMP; trials of new COMSEC equipment integrated with facsimile installations and communicating word processors; and co-ordination of COMSEC briefing and training sessions for client departments.

In the area of emergency telecommunications planning, the department continued to work with the common carriers to develop programs and arrangements such as those for the physical protection of important installations; restoration of priority circuits; priority use of telephone by crisis managers; and safe routing of long haul systems. Emphasis was also placed on planning and exercising international civil defence communications through participation in NATO activities and in consultation with U.S. authorities.

Appendix I

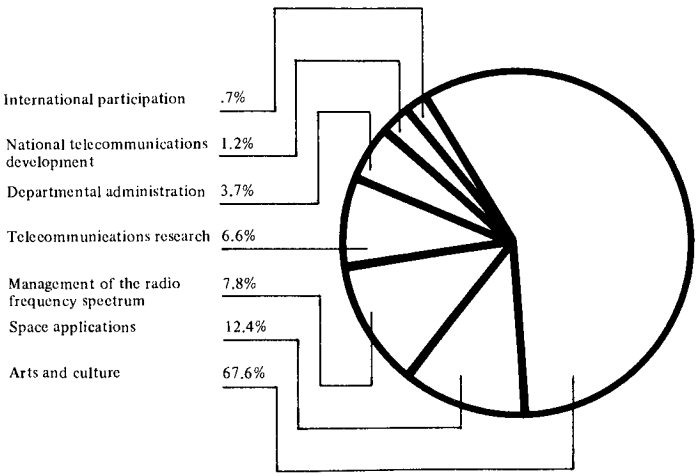
Expenditures by activity 1982/83
(in thousands of dollars)

	Operating	Capital	Grants and contributions	Total
COMMUNICATIONS PROGRAM				
Departmental administration	15,797	2,399		18,196
Telecommunications research	18,837	12,608	1,482	32,927
National telecommunications development	5,502	25	447	5,974
International participation	1,621		1,853	3,474
Management of the radio frequency spectrum	36,707	1,901	251	38,859
Space applications	34,551	8,865	18,284	61,700
Contributions to employee benefit plans	9,122			9,122
	122,137	25,798	22,317	170,252
Less: revenues credited to the vote	5,275			5,275
	116,862	25,798	22,317	164,977
Less: receipts credited to revenue	29,098			29,098
Add: accommodation provided without charge by this department	2,959			2,959
accommodation provided without charge by Public Works	5,502			5,502
other services provided without charge by other departments	1,537			1,537
Total cost of program	97,762	25,798	22,317	145,877
COMMUNICATIONS PROGRAM– GOVERNMENT TELECOMMUNICATIONS AGENCY REVOLVING FUND				
Administration	3,396	129		3,525
Telecommunications engineering support	4,897			4,897
Operations	108,568			108,568
	116,861	129		116,990
Less: receipts credited to the Fund	118,848			118,848
	(1,987)	129		(1,858)
Total cost of program	95,775	25,927	22,317	144,019
ARTS AND CULTURE PROGRAM				
Policy development and analysis	3,400			3,400
Special programs	309,912	9	22,411	332,332
Contributions to employee benefit plans	397			397
	313,709	9	22,411	336,129
Less: receipts credited to revenue	38			38
Add: accommodation provided without charge by Public Works	197			197
other services provided without charge by other departments	61			61
Total cost of program	313,929	9	22,411	336,349
Grand total	409,704	25,936	44,728	480,368

SOURCE: Public Accounts of Canada, 1982/83

Appendix II

Operating expenditures by activity 1982/83
(excluding the Government Telecommunications Agency)



SOURCE: Department of Communications

Appendix III

Government Telecommunications Agency Revolving Fund

Statement of operations for the year ended March 31, 1983

	1983	1982
	$	$
Revenue		
Telecommunication services	116,375,065	71,177,232
Expenses		
Operating		
Intercity network	48,410,589	40,812,116
Customized services	47,814,987	12,623,567
Operators' services	5,031,136	4,337,834
Government data network	4,341,794	4,271,760
Local shared services	1,351,455	1,162,730
Interest charges	643,243	484,260
Directory services	441,600	405,329
Leased space	118,964	114,946
Other	84,769	200,541
	108,238,537	64,413,083
Engineering support		
Salaries and employee benefits	4,340,489	3,515,658
Rental building and equipment	299,138	138,313
Professional services	106,743	53,606
Travel and removal	105,799	99,485
Office materials and supplies	22,527	15,379
Telephone and freight	19,582	16,715
Other	17,743	4,929
	4,912,021	3,844,085
Administration		
Salaries and employee benefits	2,193,648	1,924,268
Rental building and equipment	510,841	257,004
Professional services	324,731	250,756
Telephone and freight	166,385	154,416
Depreciation	70,274	57,892
Travel and removal	64,373	77,226
Office materials and supplies	55,136	48,479
Repairs	44,518	16,540
Other	43,349	20,807
Information	33,867	558
Loss on disposal of fixed assets	1,355	483
	3,508,477	2,808,429
	116,659,035	71,065,597
Net loss (profit) before extraordinary item	283,970	(111,634)
Extraordinary item – Settlement of terminated contract		1,485,822
– Receipt of appropriation for reimbursement of extraordinary item (Note 1)	(1,485,822)	
Net (profit) loss	(1,201,852)	1,374,188

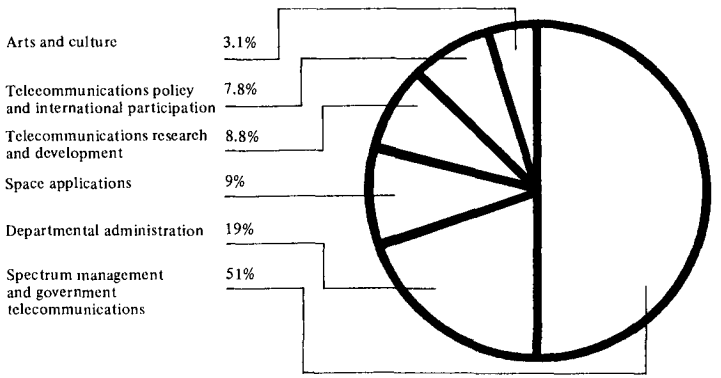
1. Authority and purpose

The Government Telecommunications Agency Revolving Fund was originally established in 1963 to plan and provide telecommunications facilities and services at the request of federal departments and agencies. Section 23 of the Adjustment of Accounts Act authorized the Minister to make payments out of the Consolidated Revenue Fund for working capital, capital equipment and temporary financing of operating requirements, the total of which was not to exceed $8,000,000 at any time. This authority was increased to $12,000,000 by Appropriation Act No. 4, 1981-82. In accordance with Vote 2e, Appropriation Act No. 4, 1982-83, an amount of $1,485,822 was credited to the Fund for a payment to Bell Canada for a terminated contract. An amount of $741,781 representing net assets assumed by the Fund and assets contributed to the Fund was charged against this authority when the Fund became budgetary in 1981.

SOURCE: Public Accounts of Canada, 1982/83

Appendix IV

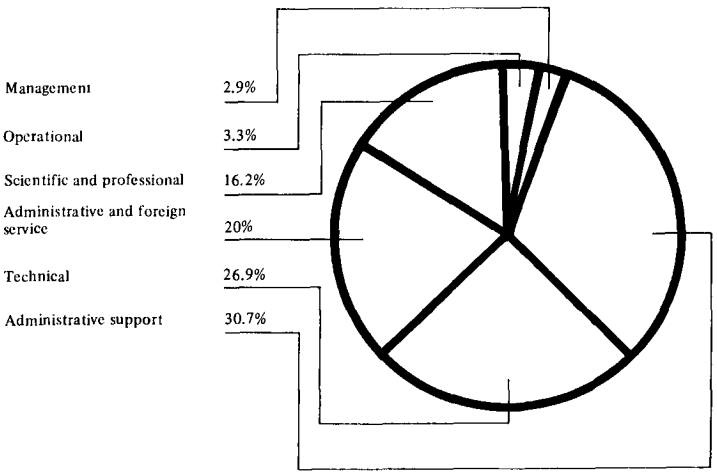
Departmental employees by activity 1982/83



SOURCE: Department of Communications

Appendix V

Distribution of employees by employment category

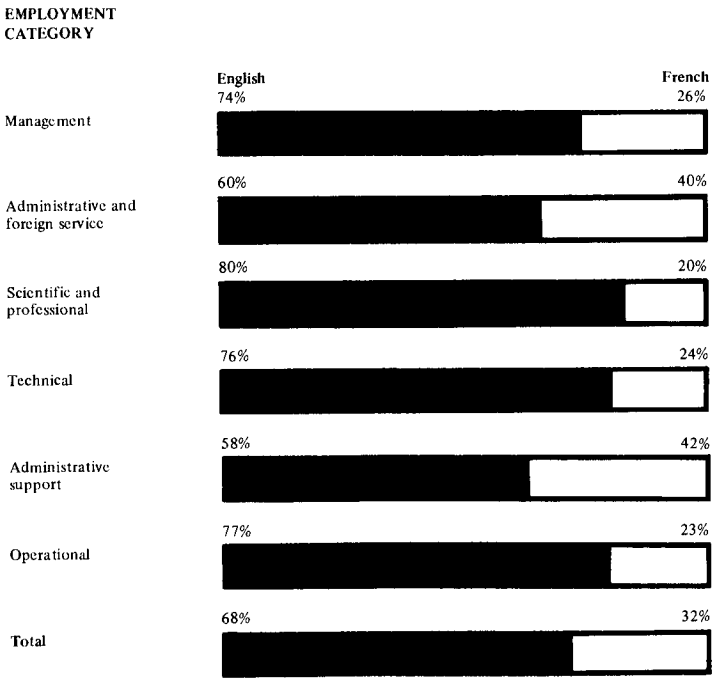


NOTE: Figures as of March 31, 1983.

SOURCE: Department of Communications

Appendix VI

Distribution of employees by employment category and first official language

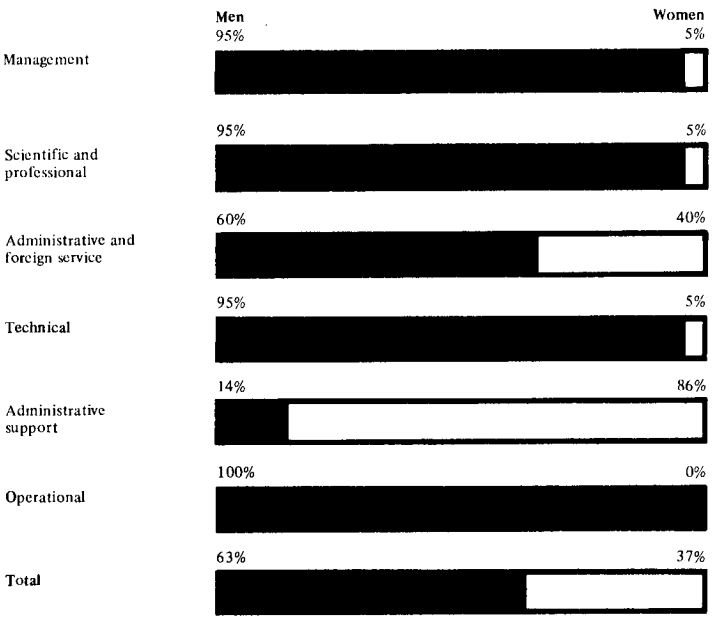


NOTE: Figures as of March 31, 1983.

SOURCE: Department of Communications

Appendix VII

Distribution of employees by employment category and sex

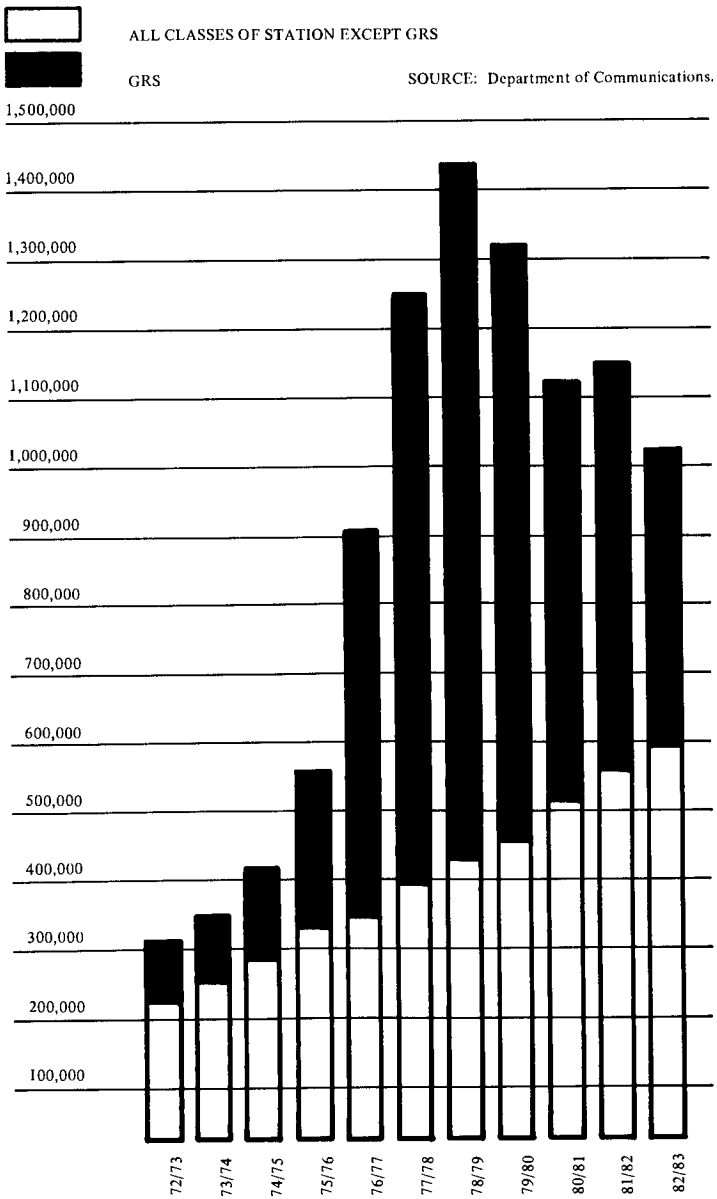


NOTE: Figures as of March 31, 1983.

SOURCE: Department of Communications

Appendix VIII

Radio station licences in force from 1972/73 to 1982/83



Appendix IX

Radio stations by service category for 1982/83

Service Category*	Number of Stations			
	Ship	Coast	Land	Mobile
Maritime mobile	31,379			
Limited maritime mobile		22		
Private maritime mobile		116		
Public commercial			2,275	16
Restricted public commercial			1,892	
Private commercial**			56,095	366,858
Provincial government			8,409	51,054
Municipal			5,167	40,682
Experimental			587	621
Amateur			22,292	
Public commercial receiving			199	
Private commercial receiving			888	513
Public commercial automatic repeater			1,303	
Private commercial automatic repeater			4,378	
Aircraft navigational				7
Aeronautical mobile			1,917	17,206

* 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 the category are 10,879 land and 62,417 mobile stations licensed to federal government departments.

NOTE: Excluded from the above are the following radio stations:

General radio service	439,027
Earth	957
Space	8

SOURCE: Department of Communications

Appendix X

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 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

SOURCE: Department of Communications

Appendix XI

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

Nova Scotia

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.
C1A 4A9

Newfoundland

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

QUEBEC REGION

Regional Office
Department of Communications
Rasco Hotel
295 St. Paul East
MONTREAL, Que.
H2Y 1H1

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

Department of Communications
Suite 401
1650 King Street West
SHERBROOKE, Que.
J1J 2C3

Department of Communications
P.O. Box 2007
NORANDA, Que.
J9X 5A5

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

Department of Communications
Public Building - Post Office
P.O. Box 67
Suite 339
1285 Notre-Dame Street
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
Suite 206
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.
N9A 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
Room 210
135 James Street South
HAMILTON, Ont.
L8P 2Z6

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

Department of Communications
Federal Building, Room 273
Clarence Street
P.O. Box 633
KINGSTON, Ont.
K7L 4X4

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

CENTRAL REGION

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

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

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

PACIFIC REGION

British Columbia

Regional Office
Department of Communications
800 Burrard Street, Suite 1700
VANCOUVER, B.C.
V6Z 2J7

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 583
PRINCE RUPERT, B.C.
V8J 3T1

Department of Communications
3884 192nd Street
P.O. Box 3396, Station A
LANGLEY, B.C.
V3A 3R7

Department of Communications
800 Burrard Street, Suite 1700
VANCOUVER, B.C.
V6Z 2J7

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

Department of Communications
101 - 125 10th Avenue South
CRANBROOK, B.C.
V1C 2N1

Yukon District

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