TELECOMMISSION

Study 3(e)

An Analysis of International Telecommunications Operations, and the Growth and Handling of International Traffic

The Department of Communications

AN ANALYSIS OF INTERNATIONAL TELECOMMUNICATIONS OPERATIONS, AND THE GROWTH AND HANDLING OF INTERNATIONAL TRAFFIC.

TELECOMMISSION STUDY

3 (e)

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This Report was prepared for the Department of Communications by a project team made up of representatives from various organizations and does not necessarily represent the views of the Department or of the federal Government, and no commitment for future action should be inferred from the recommendations of the participants.

This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.

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Information received

Canadian National/Canadian Pacific Telecommunications	-	Brief
Canadian Overseas Telecommunication Corporation	-	Brief
Commercial Cable Company	-	Information as solicited
Electronics Industries Association (Canada)	-	Comments
Trans-Canada Telephone System/Telephone Association of Canada	-	Brief
Western Union International Inc.	-	Information as solicited

TERMS OF REFERENCE

Terms of Reference

3 (e) An analysis of international telecommunications operations, and the growth and handling of international traffic.

Section 1 - Services and facilities

The intent under this heading is to identify the various carriers operating in Canada carrying international telecommunications and catalogue the services which are generally available between Canada and other countries. The points to be covered under this section are:

a) Indicate which telecommunications services are provided between Canada and other countries, mentioning significant domestic services whose international connections are limited or not provided.

b) As well as public services, such as telephone and telegraph, mention other services provided on full or part-time basis.

c) Indicate the existing degree of automation and plans for its expansion.

d) Indicate changes foreseen in international services, from the subscribers point of view.

Section 2 - International-Domestic Relationships (Note)

The intent under this section is to analyze the relationships between International and Domestic carriers concerned in providing international connections between users in Canada and in other countries, and to determine whether any changes should be made to further the interests of Canadian users.

a) Details of the operating, tariff rates, and settlement of accounts obligations of Canadian carriers concerned in international operations.

b) Details of the operating, tariff rates, and settlement of accounts obligations between the international and domestic carriers of connections between Canadian users and other countries.

NOTE: It was found expedient to deal only with obligations in this section as information about operations, rates and settlements is included in Sections 1, 5 and 6 respectively

Section 3 - Size and Nature of Market

Intent is to attempt a 5-year forecast of the market for International services between Canada and other countries. Points to be covered include:

a) Data showing current traffic volumes and Canadian revenues in 1968 for various services.

b) Estimates of the growth rate per year of each of the services listed in respect to (a) above and any new services foreseen.

c) Description of changes foreseen in customer demands.

Section 4 - Investments

Intent is to examine the aggregate amount of investment each carrier has made which is directly related to the provision of international service. Points to be covered include:

a) Indicate the present capital investment attributable to the provision of international service by each of the international and domestic carriers concerned.

b) Indicate the amounts which are expected to be included in capital budgets for expansion of the various services for each of the ensuing 10 years.

Section 5 - Rates and Tariffs

Intent is to determine the extent to which rate structure for international services are fair and equitable to Canadian users. Points to be covered include:

a) Describe the principles followed in the determination of rates and tariffs for international services.

b) Describe how international rates and tariffs from Canada to other countries are co-ordinated with domestic carriers and foreign international carriers.

c) Indicate the extent to which international rates and tariffs offered by Canadian telecommunications entities are competitive with foreign international carriers and giving details of any differences.

d) Indicate changes in customer rates and tariffs foreseen for the next 5 years.

Section 6 - Settlements

Intent is to determine the extent to which present settlements and division of revenue for international services are in the best interests of Canada. Points to be covered include:

a) Describe present settlement of accounts and division of revenue,

(i) between Canadian international carriers and foreign inter-connecting carriers.

(ii) between Canadian international carriers and Canadian domestic carriers.

b) Indicate whether changes are foreseen, due for example to new technology (the exact route traversed by a call may not be known due to automatic switching; another case, routes of different performance may be available on demand).

INTRODUCTION

AN ANALYSIS OF INTERNATIONAL TELECOMMUNICATIONS OPERATIONS AND THE GROWTH AND HANDLING OF INTERNATIONAL TRAFFIC

To clearly describe existing international telecommunications service arrangements, it is necessary to deal separately with two distinctly different situations.

Accordingly, this Report is compiled under two different headings, namely, International No. 1 and International No. 2.

The following table illustrates this division:

	International No. 1	International No.2
CANADA to:		
Continental U.S.		X
Mexico		X
Alaska		X
Hawaii		X (1)
U.S. Possessions such as Puerto Rico		X (1)
St.Pierre/Miquelon		X (2)
All Other Countries	X	

NOTE 1: Excepting Telegraph service which is handled under International No. 1.

NOTE 2: Excepting Telephone service which is handled under International No. 1.

The following International overseas carriers provide service as described in the report:

Canadian Overseas Telecommunication Corporation (COTC), a Federal Government Corporation.

Commercial Cable Company (CCC), a subsidiary of the ITT World Communications Inc. - U.S.

Western Union International Inc., (WUI), a branch of the Western Union International Inc. U.S.

In addition, as described in this report, Canadian telephone companies, Canadian National and Canadian Pacific Telecommunications participate in the provision of International No. 1 service and operate directly with U.S. carriers in the provision of International No. 2 service.

Throughout this report, reference is made to the Trans-Canada Telephone System (TCTS). It is to be understood that this embraces facilities provided by the following entities forming that System:

British Columbia Telephone Company operates generally in the province of British Columbia. British Columbia Telephone Company is shareholder-owned with 50.34% of common stock owned by Anglo Canadian Telephone Company of Montreal. Anglo Canadian is a wholly-owned subsidiary of General Telephone and Electronics Corporation, New York, N.Y.

Alberta Government Telephones, Saskatchewan Telecommunications and Manitoba Telephone System operate in their respective provinces and are owned by the provincial governments.

Bell Canada serves most of Ontario and Quebec, and some parts of Labrador and the Northwest Territories. Bell Canada is shareholder-owned; in the order of 98% of their common stock is held by Canadians.

Maritime Telegraph & Telephone Co. Ltd. serves the province of Nova Scotia and through a subsidiary, The Island Telephone Company Limited (56% owned), the province of Prince Edward Island. The company is shareholder-owned, with 51% owned by Bell Canada. Nova Scotia government limits shareholders to voting 1,000 shares regardless of any greater number held.

The New Brunswick Telephone Co. Ltd. serves the province of New Brunswick. The company is shareholder owned with 51% owned by Bell Canada.

Newfoundland Telephone Company Limited serves a portion of Newfoundland. For all practical purposes, this is a subsidiary of Bell Canada.

Member companies of the Telephone Association of Canada, in addition to TCTS members mentioned above are Québec-Téléphone, edmonton telephones, Northern Telephone Ltd., Island Telephone Company and Ontario Northland Communications.

Other principal national carriers are:

Canadian National Telecommunications (CNT), a department of the Federal Government's Canadian National Railways. CNT operates throughout Canada in conjunction with Canadian Pacific Telecommunications.

Canadian Pacific Telecommunications (CPT), a department of the Canadian Pacific Railway whose shares are owned in the majority by Canadians. CPT operates throughout Canada in conjunction with Canadian National Telecommunications. This operating consortium is referred to throughout this report as CN/CP.

SECTION I

EXTENT OF FACILITIES AND SERVICES

PUBLIC TELEPHONE SERVICE

Telephone services to about 200 countries and their overseas possessions and territories are provided through the facilities of the Canadian Overseas Telecommunication Corporation in its international gateway switching centres in Montreal and Vancouver, which in turn interconnect with the global networks of submarine telephone cables, and more recently, satellite circuits linking all continents and providing high usage routes between the major centres of the world.

The rapid growth of Canada's international telephone traffic in the past two decades since COTC became operational, can be traced in large measure to Canada's participation in the development of the world-wide high capacity submarine telephone cable complex starting with the first Trans-Atlantic link TAT-1 which was laid and put into service in 1955-56. This was followed by CANTAT and ICECAN Cable in 1961, 1962 respectively; the COMPAC Trans-Pacific Cable in 1963; in South East Asia (SEACOM) 1966; and currently to Bermuda (CANBER).

The strategic central location of Canada in the vast Commonwealth telecommunications network extending from Europe through to Australia and South East Asia has been the basis for the expansion of Canada's overseas international telecommunication services.

In recent years the advent of communication-satellite technology, and the participation of Canada in the Global Commercial Communication Satellite System (INTELSAT) has served to augment and complement the expansion of overseas telephone service by means of satellite circuits via the Canadian east coast earth station owned and operated by COTC. The development of a Canadian west coast earth station is in an advanced planning stage, and the opening of new foreign earth stations indicates the constantly increasing use of satellite communications which offer the addition facility of multi-point destinations.

Although a few high frequency (HF) radio circuits are still in existence, practically all HF services will be replaced by new cable and satellite communications facilities within the next few years.

While the bulk of International No. 1 traffic is handled through COTC gateways in Montreal and Vancouver, other traffic streams, for practical reasons, to some 35 countries identified in Appendix D are routed via U.S. gateways.

Calls are extended from the COTC gateway offices to the Canadian user over facilities of the Trans-Canada Telephone System (TCTS) members and their connecting companies.

External submarine cables landed in Canada and operated by International overseas carriers are licensed under the Telegraphs Act. Radio facilities used in connection with external telecommunications are licensed under the Radio Act. Both Acts are administered by the Minister of Communications.

Handling

All calls are handled and ticketed by TCTS operators with the exception of those of the countries shown in Appendix D and, in all cases, billing is rendered by the local telephone company.

Public telephone service between Canada and some 37 overseas points is handled on a semi-automatic basis involving one gateway operator. Manual operation involving at least one additional operator beyond the gateway is used in connections to the other (163) countries.

It is likely that most semi-automatic streams will be converted to fully automatic operation (direct dialling by subscriber) by 1975. The latter service requires a large number of circuits to ensure no-delay service as recommended by the International Telegraph and Telephone Consultative Committee (CCITT) and should not be made available until

(1) Canadian domestic telephone companies provide certain equipment (e.g. registers),

(2) no delay international facilities are provided (e.g. adequate circuitry),

(3) no delay facilities in the foreign countries are provided,

(4) the problems of tone differences are resolved.

Inadequate international or domestic facilities in any portion of the route between Canadian and foreign customers will cause the customer's call to revert to an operator as well as causing the overloading of automatic equipment by unsuccessful calling attempts, both of which will have an adverse effect on other classes of business.

COTC equipment now in place allows for conversion from semi-automatic to fully automatic operation without any modifications.

Direct subscriber dialling from overseas points into the national network is technically possible through existing COTC facilities but appears to be limited by technical and/or economic considerations of foreign originating countries or of countries through which traffic of the originating country must transit.

All operating procedures are determined by TCTS in conformity with the recommendations of CCITT of which the Telephone Association of Canada (TAC) is a member, and taking into account the limitations on classes of service (person or station, collect, credit card) agreed to by all concerned.

The allocation of circuits between Canada and overseas countries to cope with traffic peaks (e.g. division of circuits at Christmas) is arranged through COTC.

TCTS provides operator assistance when required for traffic transiting Canada. This assistance is normally limited to establishing the connection on request without any responsibility for timing the call.

Service Offerings

Within the International No. 1 public telephone service, conference call features can be made available at supplementary rates and charges.

Datel 600* (subscriber dialling) service based on CCITT Recommendations, is in operation via COTC between Trans-Canada Telephone System customers and customers in Switzerland and Britain at a guaranteed speed of 600 bits per second. It is expected that this service will be extended in September 1970 to CN/CP Broad Band Exchange Service customers and to all countries with which COTC has made appropriate arrangements.

Dataphone* service based on North American standards (not compatible with Datel 600) is another service offering by TCTS.

* alternate use of public telephone service for transmission of data as well as the spoken word by subscribers having the necessary apparatus.

PUBLIC MESSAGE TELEGRAPH SERVICE

This service is available directly through facilities in Canada of the COTC, WUI, and CCC to all countries in the world, and indirectly to some countries that can only be reached through interconnections between COTC Montreal and RCA New York. (See Appendix 'A') Traffic to Canada follows the routes of the above-mentioned carriers.

Telegraph traffic routed through COTC is connected directly to the COTC message switching centre in Montreal, thence on international voice frequency multi-channel systems over the cable and satellite facilities described under telephone services.

CCC telegraph traffic is handled over two (2) Trans-Atlantic cable circuits leased by that company from COTC. These circuits are connected to the CN/CP domestic network, i.e. one between Montreal and CCC in London is terminated in and operated for CCC by CPT Montreal, and one between Toronto and CCC in London is terminated in and operated for CCC by CNT in Toronto. CCC does not directly operate any offices in Canada.

WUI is licensed by the Department of Communications to operate a submarine cable between Canada and the Azores where connection is made to reach European countries. They are also licensed to operate two parallel submarine cables between Bay Roberts, Newfoundland, and Hammil, New York, for "through" service. These cables, according to the licence, would enable WUI to exchange traffic destined for or originated in the United States via these cables to interconnect to their Azores cable and/or to circuits leased by them from COTC.

The introduction and use of automatic service by Canadian carriers depends not only upon the extent of automatic facilities available in Canada but also that of the distant countries.

Distribution and collection of traffic between the international carriers and national users of the service is handled in various ways.

CNT and CPT are the only domestic originating and terminating telegraph service carriers in Canada that handle international telegraph traffic, excepting that COTC and WUI each operate a telegraph office in Montreal for users in that city. They exchange all other traffic with CNT and CPT.

CNT switches international traffic directly from its offices of origin in Canada through a fully automatic computer switch in Toronto to the appropriate carrier*.

CPT switches international traffic directly from its offices of origin in Canada through a semi-automatic switch in Montreal to the appropriate carrier*. Fully automatic computer switching is planned for 1971.

Various classes of telegraph service are available. Each class reflecting differences in tariff and speed of handling. The classes are: - Ordinary, Urgent, Government, Priority Government, Press, Urgent Press, RCT, Urgent RCT, Letter Telegram and Social Letter Telegram. The last is available only between places in the Commonwealth. Money Transfer Telegram service is not available on International No. 1.

WUI also leases several Trans-Atlantic circuits from COTC. These are connected to the CN/CP domestic network, i.e. one (1) between Toronto and WUI in London is terminated in and operated for WUI by CNT in Toronto, and two (2) between Montreal and WUI in London are terminated in and operated by WUI in Montreal. WUI has no plans at this time for automation.

Messages to countries served exclusively by one international carrier are handed to that carrier by the domestic carrier at the appropriate gateway. Customers in Canada may specify that messages be carried by any International carrier licensed to provide service from Canada to the destination country; these are called "routed" messages. All other messages are known as "unrouted" traffic which is shared according to agreements between the international and domestic carriers.

* Interconnection for traffic exchanged with COTC is Montreal, where relay in both directions is through a fully automatic computer switch operated by COTC. Interconnection for traffic exchanged with WUI via the computer switch in Toronto and with CCC via the CPT switch in Montreal is manually relayed in both directions by those companies in their London (England) offices.

TELEX AND TWX SERVICE

Telex service is available between Canada and most overseas countries in the world through the facilities of the COTC at the Canadian international gateways in Montreal and Vancouver. Direct normal routings provided by this service are listed in Appendix B. Indirect normal routings to over 100 other countries and territories are provided via COTC and overseas exchange facilities. In some cases, traffic between Canada and certain other countries is normally routed via interconnection between COTC and U.S. carriers, (Appendix A).

Almost all Telex service is now provided on a semi-automatic basis by COTC. The few remaining manual circuits are in the process of conversion during the present transitional period. Fully automatic service, including additional direct routes, is planned by COTC for late 1970. CNT and CPT are the only domestic carriers that provide Telex in Canada. All of their 20,000 subscribers have access via COTC facilities to all countries having Telex service.

A teletypewriter exchange (TWX) service is provided by TCTS. This subscriber-dialled service employs apparatus differing from that used in Telex. For international working, converter equipment provided by COTC must be used because speed and codes differ.

OTHER SERVICES

General

For all the following services both TCTS and CN/CP networks can provide the national extensions in Canada beyond the COTC overseas terminals in Montreal and Vancouver.

Television

Available through COTC on an occasional-use basis to countries in the Atlantic and Pacific zones of coverage by the INTELSAT satellites having operational earth stations, or operating agreements with other earth station owners (Appendix C). Also available on a double satellite-hop basis to Indian Ocean countries.

Terrestrial facilities for picking up or distributing TV presentations connect to the COTC satellite earth station at Mill Village, N.S. for Trans-Atlantic telecasts.

Pacific telecasts involve the use of terrestrial connections to the U.S. satellite earth station at Jamesburg, California.

Program (Sound)

Available through COTC facilities as described above under "Television". Additionally program facilities can be provided via COTC submarine cables crossing both the Atlantic and Pacific regions.

High Speed Data

Broadband data service is available through COTC facilities on a full-time private line leased basis at most bandwidths, e.g. Group (40.8 Kbits), Super Group (230.4 Kbits), etc., to countries referred to under the above paragraph relating to television. No public demand has yet arisen.

Switched Data Service

This is a direct-distance subscriber dialling service which provides for subscriber-to-subscriber transmission of digital or analog signals at speeds up to 4800 bauds. Within Canada, this service is offered by CNT and CPT jointly as Broad Band Exchange Service. It will also be available from the TCTS before the end of 1970 as Multicom-medium speed. No demand has yet arisen internationally for switched data service at speeds in excess of 2400 bauds.

Narrowband Data

Available through COTC facilities on a full-time private line leased basis in varying bandwidths, giving capability of speeds from 60 b.p.s. to 4800 b.p.s. to all countries referred to under the paragraph dealing with television, excepting that in most cases for Indian Ocean areas the service would be provided via cable with only one satellite extension involved.

Other Private Line Service

COTC offers, on a full-time basis, private line voice service and dedicated private line circuits suitable for narrative and for data transmission in bandwidths from ¼ of 50 bauds to 4800 bauds.

Photo Telegraph Service

Available through COTC facilities at Montreal or Vancouver. Domestic carriers are not involved, as collection and distribution is handled by COTC usually by mail.

CHANGES FORESEEN (OTHER THAN GROWTH)

Public Telephone Service

No additional changes in operating procedures are foreseen as the outcome of likely conversion of some semi-automatic operations to fully automatic by 1975.

TCTS envisage the possible introduction of Wide Area Telephone Service (WATS) and/or telescript service, and

(a) a requirement that the grade of international service become increasingly similar to the domestic (Canadian) and Canada-U.S. service.

(b) an increased demand for automation, i.e. International Direct Distant Dialling (IDDD), noting that, as it will be a costly service to provide for a relatively small volume of calls, IDDD must be introduced slowly and on a progressive basis, with careful selection of terminating countries and perhaps even heavy users.

Public Telegraph Service

COTC foresees no additional changes in operating procedure. CN/CP foresee no significant changes. CPT plan to implement fully automatic computer switching in 1971.

Telex

COTC envisages conversion from semi-automatic to full automatic operation by late 1970, and extension of service to several additional countries.

TV, Program, Broadband and Other Private Line Services

COTC foresees a greater demand for data and leased line services by 1972.

CN/CP anticipates that, as a result of the increasing trend toward computer-to-computer communications in Canada, there will be a growing demand for higher-speed international circuits at speeds up to 9600 bauds.

TCTS foresees an increase in demand for data service. Plans are under way to provide a wider range of switched data services which could be available to COTC for extension overseas.

PUBLIC TELEPHONE SERVICE

Extent

Public telephone service between Canada and continental U.S. including Hawaii, Alaska and U.S. overseas possessions such as Puerto Rico, and between Canada and Mexico is provided, particularly on the North American continent, by extensive trans-border facilities employing a variety of wires, cable and radio. The latter includes microwave as well as troposcatter systems licensed under the Radio Act by the Minister of Communications.

Several Canada-U.S. border crossings are established for calls between Canada and continental U.S. and the State of Alaska. These gateways, except the latter, are also used for the exchange of calls between Canada and Mexico, Hawaii, and U.S. overseas possessions, such as Puerto Rico, all of which entail further routing through designated international gateways in the U.S.

Trans-border facilities are provided by a wide variety of telephone service entities, i.e. B.C. Telephone Co., Alberta Government Telephones, Saskatchewan Government Telephones, Manitoba Telephone System, Bell Canada, New Brunswick Telephone Company and Canadian National Telecommunications.

Public telephone service between Canada and the United States in North America, and between Canada and Mexico, through the present integration of Canadian and U.S. domestic networks, permits, in most cases, direct dialling by subscribers. Exceptions exist with respect, for example, to remote areas and technically under-developed small rural company service areas in both countries.

Statistics indicate a very high percentage of automation. Canadian domestic telephone entities are continuing to add Direct Distant Dialling (DDD) capability in the few areas not yet so equipped.

Ticketing and handling of calls is carried out through automated TCTS facilities.

Service between Canada and Alaska is semi-automatic involving operator assistance. Facilities of Canadian National Telecommunications and the B.C. Telephone Company connect at Canada-U.S. border points with Alaskan facilities. Operator gateways are Vancouver (B.C. Tel.) Edmonton, Alta. (AGT) and Whitehorse, Y.T. (CNT). Ticketing and handling of calls is done by the originating operators.

Service between Canada and Hawaii and several U.S. overseas possessions such as Puerto Rico is also semi-automatic operation requiring operator assistance. Customer dialling of calls to Hawaii is planned for January 1972.

Trans-border facilities between Canada and continental U.S. are used for routing calls via U.S. international gateways to and from these points. The direct Canada-Hawaii COMPAC cable, owned and operated by COTC is not used at present, but after mid-1971 the current switching capability situation may change so that direct Canada-Hawaii circuits will be economical to operate.

Ticketing and handling of calls is done by Canadian operators of TCTS.

Service Offerings

Within International No. 2 public telephone service, conference call features can be made available at supplementary rates and charges. Dataphone service at speeds up to 2000 bits per second can be provided between Canada and continental U.S.

PUBLIC MESSAGE TELEGRAPH SERVICE

The Final Protocol (not objected to by Canada) included the following statement by the United States of America at the time of the signature of the International Telegraph Regulations (Geneva - 1958):

> "The United States of America formally declares that the United States of America does not, by signature of the Telegraph Regulations (Geneva Revision, 1958) on its behalf, or by ratification thereof, accept any obligation in respect of the application of any provision of the Regulations to service within the United States with respect to telegrams between the United States, on the one hand, and Canada, Mexico, and Saint-Pierre and Miquelon Islands, on the other hand, and to the rates applicable to such service."

CPT and CNT are the only domestic originating and terminating telegraph service carriers in Canada which handle International No. 2 telegraph traffic.

Service between Canada and continental U.S. (except Alaska) and Mexico is exchanged by CNT and CPT with the Western Union Telegraph Company. The point of interchange is Minneapolis, Minn., where traffic is relayed in both directions through a Western Union semi-automatic store-and-forward switching machine.

Service between Canada and Alaska is via a border crossing near Whitehorse, Y.T., where CNT alone interconnects with the U.S.-owned Alaska Communications System currently being acquired by the Radio Corporation of America (RCA). The operation is manual.

Service between Canada and St. Pierre/Miquelon is handled through COTC in Montreal.

Various classes of service in International No. 2 are available, each reflecting differences in tariff and speed of handling, i.e. Full Rate, Night Letter, Press, and Money Transfer Telegrams.

Telex

CPT and CNT are the only domestic carriers that provide Telex in Canada. Fully automatic Telex (direct subscriber dialling) is available between some 20,000 Canadian Telex subscribers and Telex subscribers in continental United States and Mexico by way of a CN/CP interconnection with Western Union in the United States. Hawaii and U.S. possessions such as Puerto Rico are serviced under International No. 1.

Service between Canada and Alaska is being arranged. Service between Canada and St. Pierre/Miquelon is not yet available.

Telex calls from Canada to Mexico are made by dialling access code "OO" followed by the called subscriber's number.

TWX

This service is provided to some 4000 subscribers in Canada through Canadian telephone companies and is available on a fully automatic basis between Canada and continental U.S. (excluding Hawaii, Alaska and U.S. possessions such as Puerto Rico) by way of the automatic DDD network.

Canadian TWX calls to and from Mexico are routed via COTC Montreal for conversion and onward transmission as Telex via the CCTC-RCA New York interchange.

General

Inter-working between Telex and TWX networks in Canada is not available. Blocking arrangements exist to prevent Canadian Telex or TWX subscribers from reaching overseas points via the U.S. networks. When Western Union completes its acquisition of U.S. TWX, it will institute a form of interconnection between U.S. Telex and U.S. TWX. Unless Western Union sets up specific blocking arrangements this will have the effect of permitting a Canadian TWX subscriber to access the U.S. Telex network and a Canadian Telex subscriber to access the U.S. TWX network.

OTHER SERVICES

Television

Facilities of both the Trans-Canada Telephone System and of CNT/CPT are available for telecasts on an occasional basis as well as on a contract basis. Currently this service is made available by the former under contract with CBC and CTV organizations.

Program (Sound)

Same as for "Television" above.

Switched Data Service

For this service between Canada and continental U.S. (excepting Alaska and Hawaii) CN/CP through interconnection with the Western Union in the U.S., offer Broad Band Exchange Service, i.e. a direct-distance subscriber dialling service for digital and analog transmissions for speeds up to 4800 bauds on a fully automatic basis. The capability of fully automatic switching of circuits in the 8, 16 and 48 kilohertz bandwidth is also provided. Through interconnection with U.S. telephone companies, TCTS offers voiceband switched data service up to 2000 bits per second over the switched network. TCTS offer in Canada, Multicom-high speed service at 19.2, 40.8 and 50 kilobits per second.

Private Line Service

TCTS through interconnection with U.S. telephone companies, offers private line voice and private line teleprinter services.

CN/CP through interconnections with Western Union and the Alaska Communications System offers private line voice service between Canada and U.S. including Alaska, but excluding Hawaii and other U.S. possessions such as Puerto Rico. Through similar interconnections CN/CP offers private line teleprinter service between the same areas.

Where the customer uses such private line leased facilities for data transmission purposes, he may provide his own data transmission and receiving equipment.

CN/CP and TCTS offer circuits suitable for narrative and data transmission which are available in varying bandwidths, giving capability of speeds from 50 to 4800 bauds. Teleprinter equipment is available at speeds of 60, 75, 100 and 150 w.p.m. Service is furnished for periods of 4, 8, 12 and 24 hours per day, or from five to seven days per week.

19.2, 40.8 and 50 kilobit-per-second service can be supplied using the spectrum of 6, or 12 standard voice channels.

Automatic Hot Line voice service is provided by CN/CP in conjunction with Western Union between Toronto and New York and between Montreal and New York. This is a 2-point service provided by concentrator-type switching equipment interconnected by common intercity trunks.

CHANGES FORESEEN (OTHER THAN GROWTH)

Public Telephone Service

TCTS foresees an increased demand for automation and Extended Direct Distant Dialling (EDDD), i.e. person-to-person, coin stations, etc., also the possible introduction of Wide Area Telephone Service (WATS) and/or telescript services.

Public Telegraph Service

No significant changes are foreseen by CN/CP. CPT plan to implement fully automatic computer switching in 1971.

Telex

Extension of service to Alaska is foreseen. No other significant changes are anticipated.

TV, Program, Broadband and Other Private Line Services

TCTS see an increase in demand for data service. CN/CP anticipates that, as a result of the increasing trend toward computer-to-computer communications in Canada, there will be a growing demand for higher-speed international circuits operating at speeds up to 9600 b.p.s.

SECTION II

OBLIGATIONS

Canadian Overseas Telecommunication Corporation (COTC)

The COTC Act of 1949 (as amended in 1963 and 1969) states that the Corporation is established for the following purposes:

(a) to establish, maintain and operate in Canada and elsewhere external telecommunication services for the conduct of public communications;

(b) to carry on the business of public communications by cable, radiotelegraph, radiotelephone or any other means of telecommunication between Canada and any other place;

(c) to make use of all developments in cable and radio transmission or reception for external telecommunication purposes as related to public communication services;

(d) to conduct investigations and researches with the object of improving the efficiency of telecommunication services generally; and

(e) to co-ordinate Canada's external telecommunication services with the telecommunication services of other nations.

Provision of service, operations, etc. are in accordance with the ITU Regulations and appropriate Recommendations.

COTC is licensed by the Minister of Communications under the Telegraphs Act to operate and maintain external submarine cables for handling terminating and through traffic. COTC is also licensed under the Radio Act to maintain and operate various radio facilities including the satellite earth station at Mill Village, N.S.

COTC is jointly licensed with ET & T relative to 12 radio stations between and including Sydney Mines, N.S. and Spruce Lake, N.B. which (together with a station at St. George, N.B. licensed only to ET & T) form the microwave system for traffic to and from the TAT-1 and TAT-2 cable heads at Sydney Mines. The COTC portion of the microwave system ends at Spruce Lake and the extension of TAT-1 facilities into COTC facilities at Montreal is via a different microwave system.

These licences include special conditions such as to require the Undertaking given by various companies and set out in detail under the heading "Western Union International Inc." at subsequent paragraphs in this report.

Eastern Telephone and Telegraph Company (ET & T)

ET & T is licensed by the Minister of Communications under the Telegraphs Act to operate and maintain external submarine Trans-Atlantic cables (TAT-1 and TAT-2) for handling through traffic, between U.S. and Europe via Canada.

In addition to the 12 radio station licences issued jointly to COTC and ET & T as described previously under COTC, ET & T are also licensed to operate and maintain a station at St. George, N.B. through which the U.S. portion of the TAT-1 and TAT-2 cable facilities are extended into the United States.

Western Union International Inc. (WUI)

WUI is licensed by the Minister of Communications under the Telegraphs Act to operate and maintain external submarine cables; one between Canada and Azores and two between Canada and the U.S., for handling terminating and through telegraph traffic.

The following UNDERTAKING has been given by WUI:

"In order that Western Union International, Inc. may use through circuits transiting Canada leased or made available under an indefeasible right of user basis in the TAT-1 and TAT-2 systems pursuant to the provisions of the Canadian licenses issued in connection with the microwave portion of such system, Western Union International, Inc. covenants as follows:

> "That it will not handle or permit to be handled any communication traffic of any kind to and from Canada on circuits leased to it or made available under an indefeasible right of user basis in TAT-1; TAT-2; or effective July 1, 1960, on any circuits which it may own, in whole or in part, or lease or have available under an indefeasible right of user arrangement in any other telecommunication facility terminating in or transiting the United States without the specific authority of the Minister of the Department of Transport (now Department of Communications)".

Additionally, the following companies have each given the same UNDERTAKING:

Commercial Cable Company
RCA Communications Inc.
The French Cable Company
Press Wireless Inc.

Trans-Canada Telephone System (TCTS)

TCTS members have undertaken to coordinate their operations and those of other domestic carriers, in providing connections between users in Canada and other countries, so that the same standards and procedures apply across Canada, regardless of the points in Canada from which the calls originate. As far as conditions permit, Canadian users calling to other countries are provided service similar to that to which they are accustomed when making toll calls within Canada's borders. In the case of service to the U.S. and its possessions, TCTS follows practices and maintains standards of service which are common to North America. Almost identical classes of calls and billing options such as collect, bill to third number, station and credit card are provided everywhere in Canada and the U.S.

TCTS undertakes to make available to users in other countries who call Canada, generally the same operating methods and standards of service which are in effect for domestic Canadian service. This applies particularly to the U.S. and its possessions where users and operators find that auxiliary services such as directory assistance and intercept are virtually the same in Canada and the U.S. In other cases, directory assistance service for obtaining numbers, intercept service for obtaining information on the status of numbers and assistance service in establishing connections when required, are available to foreign operators.

Canadian National Telecommunications (CNT) and Canadian Pacific Telecommunications (CPT)

These carriers are obligated under various inter-carrier Agreements, Memorandums of Understanding, etc. to which reference is made under Section V (Settlements) International No. 2.

They are also obligated under the Railway Act (Canada), the Radio Act (Canada) and under the International Telegraph Regulations (Geneva 1958) as signed by Canada.

SECTION III

SIZE AND NATURE OF MARKET

General Comments

Customer demands are seldom expressed with clarity and real telecommunication needs cannot therefor be assessed on the basis of such expressed demands since they may have little or no significance toward satisfactory results.

Market surveys carried out under contract by non-operating firms have in general proved rather inconclusive and unproductive.

Accordingly, experts of telecommunications entities are obliged to suggest whatever operational and technical solutions appear to be the most appropriate in view of the importance and urgency attached by customers to their need for the exchange or distribution of information.

Plans made by telecommunications entities for expansion of their facilities are essentially in the nature of a forward-looking business risk based upon careful appreciation of a wide variety of factors including social and economic considerations, technical traffic measurements of circuits and systems, collaborative discussions with other carriers and a constant evaluation and interpretation of demands implied or indicated by users in the way of their conferences, deliberations and discussions.

The following tables provide information about traffic volumes and revenues.

NOTE: See also explanatory information under the heading "Growth Rates" and the heading "Changes Foreseen" under International No. 1 and No. 2 respectively.

TRAFFIC VOLUMES FOR 1968 (BOTH WAYS)

	COTC	WUI	CCC	TOTALS
(A) Telephone (Pd.minutes)	7,700,000	-	-	7,700,000
(B) Telegraph (Messages)	2,600,000	477,644	490,000	3,567,644
(B) Telex (Minutes)	2,940,000		(C)104,000	3,044,000
(A) TWX (Messages)	41,061	-	-	41,061
(A&B) Private Lines	Various	-	-	Various
(A&B) Program (Minutes)	34,800	-	-	34,800
(A&B) Television (Number)	46	-	-	46
(C) Phototelegrams	Minor	-	-	Minor
(B) Datel 600 (Minutes)	4,500	-	-	4,500

(A) - Exchanged with TCTS

(B) - Exchanged with CN/CP

(C) - Exchanged with COTC.

REVENUES 1968

	COTC (1)	WUI	CCC	TOTALS
Telephone	9,185,000	-	-	9,185,000
Telegraph	3,861,000	1,265,567 (2)	1,220,000	6,346,567
Telex	4,989,000	-	52,000	5,041,000
TWX	53,000	-	-	53,000
Private Lines	9,177,000	-	-	9,177,000
Program	123,000	-	-	123,000
Television	20,000	-	-	20,000
Phototelegrams	6,000	-	-	6,000
Datel 600	17,000	-	-	17,000
	$ 27,431,000	$ 1,265,567	$ 1,272,000	$ 29,968,567

(1) Includes COTC share for handling transit traffic, international connecting carrier share, and foreign carrier terminal share.

(1) & (2) Excludes Canadian domestic carrier share.

TRAFFIC VOLUMES FOR 1968 (BOTH WAYS)

	TCTS	CN/CP	TOTALS
Telephone (Messages) *	47,471,033	-	47,471,033
Telegraph (Messages)	-	1,998,151	1,998,151
Telex	-	See revenue	See revenue
TWX (Messages)	958,837	-	958,837
Private Lines (Circuits)	3,540	See revenue	See revenue
Program (hours)	1,133	-	-
Television (hours)	4,986	-	-
Phototelegrams	-	-	-
Datel 600	-	-	-
Broadband Exch. Serv.	-	See revenue	-

* Includes Dataphone; and also Canada-Mexico, Canada-Alaska and Canada to points reached via U.S. gateways.

REVENUES - 1968

	TCTS	CN/CP	TOTALS
Telephone	61,690,816	-	61,690,816
Telegraph	-	2,591,946	2,591,946
Telex	-	1,988,031	1,988,031
TWX	875,933	-	875,933
Private Lines	13,417,530	23,700,000 *	37,117,530
Program	41,885	-	41,885
Television	121,092	-	121,092
Phototelegrams	-	-	-
Datel 600	-	-	-
Broadband Exch. Serv.	-	20,143	20,143
	$ 76,147,256	$ 28,300,120 *	$ 104,447,376

* Includes intra-Canada and Canada-U.S. and not able to segregate.

GROWTH RATES (ESTIMATED)

	International No. 1	International No. 2
Telephone	25%	9%
Telegraph	5%	- 6.7%
Telex	35%	20%
TWX	-	9%
Private Line	10%	7%
Sound Program	-	9%
Television	5%	5%
Phototelegrams	-	-
Datel 600	25%	-
Broadband Exchange Service	-	20%

The above growth rates are based upon estimates in percent per annum for the ensuing five years.

The estimates are founded on projections of several previous years records of traffic performance. In the case of International No. 1 the figures are those agreed among international carriers of several countries as well as among the operating and planning groups concerned in the Commonwealth system.

Growth rates shown under International No. 2 are also those agreed by the United States and Canadian carriers involved, e.g. TCTS - AT & T, and CN/CP - Western Union to be the best estimates based on projections of previous years performance, taking into account a wide variety of contributory factors including incentives such as reductions in telephone calling rates during off-peak hours.

Specialized economic studies carried out by the International Telegraph and Telephone Committee, (CCITT) among many widely separated countries tend to show that international trade, travel and the cost of calls are the main factors determining the volume and distribution of international service and consequently the rates of growth.

NOTE: See also explanatory information under the headings "Size and Nature of Market" and "Changes Foreseen" under International No. 1 and No. 2 respectively.

SECTION IV

INVESTMENTS

Canadian Overseas Telecommunication Corporation (COTC)

Net capital investment as at April 1, 1969 was $70,293,684.

The following is a breakdown of Capital Budgets for the years indicated:

	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76
Satellite Systems	4.65	7.4	2.	1.	.15	.35
Telephone Cable Systems	5.4	.5	1.5	1.2	9.	8.
Radio Systems	.05	.1	.1	.1	.1	.1
Building Additions	-	-	.7	1.3	-	-
Switching Centres	1.5	1.3	1.1	1.	3.	1.9
Other Terminal Equipment	3.4	3.6	4.4	5.3	6.4	7.9
	15.	12.9	9.8	9.9	18.65	18.25

Depending upon technological developments it is estimated that COTC investments will run at about $15 million per year for the next three years after 1975/76.

Commercial Cable Company (CCC)

Since CCC abandoned its old Trans-Atlantic cable system some 8 years ago, it now leases required facilities from COTC. The net result is that CCC's capital investment in Canada has been reduced to some $10,000 for equipment, but its rental costs have increased sharply. No substantial change is contemplated at this time.

Western Union International Inc. (WUI)

Cost of property and equipment (depreciated) in 1968 was $205,092. Reduction in property and equipment is due to abandoning portions of WUI North Atlantic system in favour of leasing circuits from COTC.

Eastern Telephone and Telegraph Company (ET & T)

Cost of property and equipment (depreciated) as of 1968 was $4,779,031 (per DBS). ET & T, a Canadian subsidiary of the American Telephone and Telegraph Company, (AT & T) does not operate in Canada but owns and maintains radio relay and cable facilities in Newfoundland, Nova Scotia, and New Brunswick to provide links between the U.S. and Trans-Atlantic cables landed at Clarenville, Newfoundland.

Trans-Canada Telephone System (TCTS)

Because various items of telephone plant are used for all classes of service offered, it is not possible to state precisely the investment in the plant directly related to each service. The shared use of common plant among various services or activities is a characteristic of many industries other than the telecommunications industry. Examples are the oil and transportation industries. They too have been faced with a requirement to allocate costs among various products and services.

It is possible to develop a set of rules which, when applied, will result in the allocation of investment or expenses. It must be appreciated that such an allocation is based on arbitrary premises and a plan which is designed to achieve a particular objective. Separations plans can be useful tools for specific purposes. It is essential, however, that information derived from such plans not be used for any other purposes, because the result of so doing would have no validity and could lead to erroneous conclusions.

The members of the TCTS utilize a separations system designed for the purpose of settling jointly earned revenues. That system allocates, for Division of Revenue purposes, expenses and gross investment to some of the various classes of service provided.

Investments in Canada in telephone plant of the companies of the Telephone Association of Canada (TAC) at the end of 1969 was $5.9 billion. Total plant additions planned by members of TCTS during the next 10 years for all services are developed, but there are no figures available to indicate what portion of these total expenditures will be directly related to international services. This again is because various items of plant are used in common by many services.

Canadian National - Canadian Pacific Telecommunications (CN/CP)

The common nature of switching, line and terminal facilities

provides for the handling of both domestic and international services. It is therefore impossible to segregate capital investments associated with international service only.

Cost of property and equipment (depreciated) in 1968 for domestic carriers amounted to about $283 million (per DBS).

NOTE: See also explanatory information under the headings "Growth Rates" and "Size and Nature of Market".

SECTION V

RATES AND TARIFFS

Determination

Rates and tariffs take into account the requirements of the Administrations and/or Private Operating Companies at both terminals, and in the countries through which the traffic may pass in transit.

Economic viability is the basic consideration in determining the level of COTC collection rates. In general, these are aligned with rates set by U.S. international carriers for similar services. On particular routes, rates are generally similar for both directions, subject to currency exchange variations. However, in the case of the telegraph service, the foreign collection charge based on Gold Francs is generally considerably higher than at the North American end.

In 1945 when overseas service was being reopened after the war, the AT & T and the British Post Office agreed to adopt a uniform schedule of rates for worldwide application. The "worldwide" plan was accepted by the Canadian Marconi Company (then operating the overseas wireless facilities) and by the Canadian landline systems, and is in effect in most parts of the world today.

The schedule of rates is based on the airline mileage between the centers of 10^{o} squares, measured mathematically by the Great Circle measurement plan (using geographical coordinates). In the application of this plan, it was recognized that adjustments in mileage might be required to recognize the center of population rather than the geographical center of any country.

In addition, some large countries such as Canada may be divided into zones for the establishment of rates to certain other countries where significant mileage differences are thus created. Also, in some cases, community of interest between two adjacent countries might warrant a similar rate treatment for each even though they were located in different rate zones. Similarly, community of interests have led to special rate treatment between specific countries.

Co-ordination with Domestic and Foreign International Carriers

Co-ordination of telephone service rates with the domestic carriers and the foreign international carriers is handled by the COTC on traffic via the Montreal and Vancouver gateways.

The telephone companies' (B.C. Telephone and Bell Canada) agreements with COTC require "That tolls charged to the public for messages transmitted hereunder shall be in accordance with established rates and regulations such as the parties hereto shall adopt, by mutual agreement, from time to time".

Rates for traffic via U.S. overseas terminal offices (New York City, White Plains, N.Y., Miami and Jacksonville, Fla., and Oakland, Calif.) are co-ordinated by AT & T and TCTS. COTC do not participate in the establishment of rates and do not share in the revenue deriving from traffic routed via these U.S. overseas terminal offices.

Co-ordination of COTC rates with other Commonwealth and foreign international carriers is generally on a bilateral discussion basis.

COTC telegraph rates are co-ordinated with other Canadian international carriers (CCC and WUI) through bilateral discussions.

Rates with the domestic carriers are co-ordinated by COTC through negotiations and for most services these are covered by agreements executed between COTC and the domestic carriers.

CCC have no co-ordination with foreign international carriers in establishing telegraph rates from Canada, except that their notified terminal and transit requirements are taken into consideration when setting the rates.

Extent to which Canadian International Rates are Competitive

Customer rates and tariffs are, in general, arranged to be competitive with similar rates and tariffs set by other foreign international carriers for these services, provided they can be economically viable.

The fact that the "worldwide" plan is followed ensures that Canadian users enjoy rate treatment comparable with other countries. The differences that do exist are lower rates and reflect special communities of interest or the ability to participate in savings associated with technical development.

Direct comparison of rates is difficult because of differences in purchasing power within the participating countries and the relative values of the various currencies in the foreign exchange market.

Changes in Customer Rates and Tariffs Foreseen for the Next 5 Years

On COTC Canada/U.K. and European streams, rate reductions for telex, leased circuits and certain classes of telephone service were introduced during the first half of 1970. These reductions are in the range of 16 to 25 percent and are a result of realized and anticipated operating economies. Reduced rates for certain streams of telegraph traffic are now under active consideration. Although no other reductions are planned at this time, the review of rates is a continuing exercise and adjustments are effected as conditions warrant.

A continuation of the downward trend is envisaged, due to technological advances, which has been experienced in the past barring unforeseen or extraordinary financial burdens on the business generally or on any service specifically.

Since Canadian international telegraph rates and tariffs are, to a degree, related to the requirements of other carriers (e.g. Canadian domestic carriers) it is somewhat difficult to forecast any significant changes in telegraph rates in the next 5 years. However, none is foreseen at this time.

RATES AND TARIFFS

Determination - Telephone Rates

The basic approach to the Canada - U.S. schedule of telephone rates is similar to the domestic plan in that each exchange is designated as a rate center. The message toll rates are based on the airline distance between rate centers.

For the purpose of determining such airline or rate distances, a vertical (V) and horizontal (H) co-ordinate system is used. The V-H system consists of a series of co-ordinates which represent a theoretical grid of vertical and horizontal lines covering Canada and the United States. The spacing between adjacent lines is about 1670 feet and represents a distance of one co-ordinate unit. A V co-ordinate and an H co-ordinate are computed for each rate center from its latitude and longitude location, by use of appropriate map projection equations. The rate distance between any two rate centers is the airline distance between the points designated by the V-H co-ordinates of the respective rate centers.

The Canada - U.S. schedule reflects the relative rate levels of the two national schedules (AT & T Long Lines and TCTS) in combination. As such, the general level of the Canada - U.S. rates falls between that of the Long Lines schedule and that of the TCTS schedule. The U.S. interstate rates are generally lower than TCTS due to factors such as higher telephone development, larger population base, the nature of the geographic distribution of population and the resultant economies of scale.

The Hawaiian and Alaska interchanges are rated in a manner similar to international services (zone to zone rather than rate center to rate center).

Exception

An exception occurs with traffic interchanged with Mexico. The rates for Mexico follow the "other line charge" principle. The total rate is the applicable portion of the Canada - U.S. schedule to or from the Canadian point and the U.S. - Mexico border crossing plus the intra Mexico rate between the Mexican point and the border crossing.

Determination - Telegraph and Telex

Tariff rates are set through negotiations and agreement between CN/CP and Western Union Telegraph Company in the case of services between Canada and the United States, excluding Alaska.

The guiding principle in setting rates is the economic need of the carriers involved and market elasticity.

Public message telegraph and Telex rates require the prior approval of the Canadian Transport Commission (CTC) before they are implemented. Co-incident approval by the United States Government (FCC) of Western Union Telegraph Company counterpart rates is required. CTC recently approved a change in the tariff structure of public messages exchanged between CN/CP and the Western Union Telegraph Company. The change called for a simplification of the tariff and is based on a two-zone system.

Rates to Alaska consist of the intra-Canada CN/CP rates to the interchange point plus the intra-Alaska rates set up by the Alaska Communications System, i.e. end-on-end principle.

Rates to St. Pierre et Miquelon are a combination of the intra-Canada CN/CP rates to the COTC interchange point (Montreal) plus the rates set by COTC to St. Pierre et Miquelon, i.e. end-on-end principle.

A special Telex rate applies between Canada and Mexico and differs from rates between Canada and U.S. or within Canada.

Co-ordination - Telephone Rates

Rates are co-ordinated through direct negotiation by the parties participating in the provision of service.

(a) Canada-U.S. and Canada-Mexico

- AT&T and TCTS
- Mexican traffic is associated with these negotiations in the sense that the schedule forms part of the two line rate.

(b) Canada - Hawaii

- Hawaiian Telephone Company and TCTS.

(c) Canada - Alaska

- Alaska Communications System, CNT and TCTS.

Co-ordination - Telegraph and Telex

See under "Determination" above.

Extent Rates are Competitive - Telephone

Rates are the same for telephone traffic in either direction (i.e. a call of the same duration, the same class of service and the same time of day between Ottawa and New York City has the same rate as a call in the reverse direction). As the U.S. interstate rates are considered to be as low as any in the world (on a purchasing-power basis) and as TCTS rates rank among the lowest, it must follow that Canada-U.S. rates are as low or lower than rates between other pairs of adjacent countries.

Extent Rates are Competitive - Telegraph and Telex

Rates for these services are considered to be as low as any in the world and are as low or lower between other pairs of adjacent countries. Rates are the same in either direction for the same class of service and time of day.

Changes in Customer Rates and Tariffs Foreseen For the Next 5 Years

Telephone

A continuation of the downward trend due to technological advances, which has been experienced in the past barring unforeseen or extraordinary financial burdens on the business generally or on any service specifically.

The above is particularly applicable to Canada-U.S. rates where other changes such as lower rates for customer dialed calls than for operator handled station-to-station calls, and, less than 3 minute minimum charges are being considered.

Telegraph and Telex

No comment.

SECTION VI

SETTLEMENTS

All COTC Services

Financial settlement by COTC for the major portion of Canada/Commonwealth traffic is covered by an arrangement whereby the originating country retains its net revenue which is calculated by deducting agreed terminal charges from its gross receipts. The only settlement with the distant National Body is for their portion of the terminal charges.

Canada/Foreign traffic with countries to whom direct COTC service is available and for Canada/Commonwealth traffic carried via direct COTC satellite links, sharing is on the basis of a 50/50 division of that portion of the revenue relating to the overseas circuit. In addition, the destination Administration receives their required terminal portion for such traffic.

When Canada's originated traffic handled by COTC to a foreign country, transits one or more intermediate points, each foreign Administration concerned in the handling of the message receives payment for the services rendered by it. The destination Administration also receives its required terminal charges. In such instances settlement for the portion of the route beyond the first transit point is made through the first transit Administration.

In all of the above cases, COTC accounts are rendered monthly and settlements effected quarterly.

Public Telephone Service

COTC - TCTS

Monthly settlements are made between TCTS and COTC for international connections to and from Canada routed over facilities of the COTC.

Revenues accrue to the TCTS on the basis of rates per minute which vary with the class of call and the COTC gateway office concerned, i.e. Montreal or Vancouver.

A schedule of fixed payments per minute for message toll telephone business has been established to simplify settlement procedures. The settlement agreement provides for payment of an operating charge plus an amount which varies with the point of origin and termination of traffic. These variables have been consolidated into a schedule of payments per message to simplify the monthly revenue settlement.

TCTS also receives payment for the international transiting functions which it performs on the basis of fixed amounts per minute.

For service billed in Canada, TCTS is responsible for collecting the established tariff charges from the public. The System deducts an agreed terminal amount for the facilities they provide. The balance is credited to COTC for settlement with the foreign Administration.

For service billed by foreign Administrations, the agreed terminal amount accruing to the TCTS is collected from the foreign Administration by COTC and credited to TCTS.

The net balance of revenue applicable to inward and outward business is settled with COTC each month by the British Columbia Telephone Company and Bell Canada in their capacity as agents for the TCTS.

Agreements exist between COTC and each of these telephone service entities.

The introduction of automatic alternate routing will probably necessitate that settlement between COTC and foreign carriers be based on sampling surveys rather than an attempt to record the routing of each call. Settlement would be made according to the distribution observed during the sampling period.

Settlement would still be made with the first transit center for all traffic other than direct groups. The sampling process may be combined with measurements of circuit usage on certain circuit groups such as final routes which are the alternate choice for calls to many destinations.

However, the main difference anticipated in the future will be the tendency to determine settlement for line facilities on the basis of use of those facilities rather than the summation and recording of each call. Sampling may well be the method used to determine usage. This method is much simpler and more economical than the cumbersome methods and complicated equipment involved with other procedures.

Measurement of transit calls can involve either "holding time" or "conversation time".

Settlements between COTC and TCTS may continue under a schedule of fixed payments per minute.

TCTS - AT & T

Settlements with respect to traffic between Canada and certain countries but excepting Mexico, reached through AT & T gateways, are made between the TCTS and AT & T on the basis of rates per minute which vary with the class of call, the originating or terminating point in Canada and the U.S. gateway office concerned.

Payment representing the difference between the amount billed by Canada and the amount due to Canada for inward and outward business is made each month between the AT & T and the TCTS (50% in the funds of each country, or the equivalent thereof).

Settlements relative to traffic between Canada and Mexico are described under International No. 2.

Public Message Telegraph Service

COTC - CN/CP

Settlements between COTC and CN/CP are based on a payment by COTC of a terminal share to CN/CP of 6½ cents per full-rate word handled on messages inbound to or outbound from Canada. Settlement for other classes of messages is proportionate.

CN/CP are responsible for collecting the established tariff from the public for traffic billed by them in Canada, from which they deduct the above-mentioned terminal share for the facilities they provide. The balance is paid to COTC who in turn settle with the foreign Administration.

For traffic billed by the foreign Administration, the above terminal share is collected from the foreign Administration by COTC and remitted to CN/CP.

Settlements are on a monthly basis, and are covered by an Agreement providing for the exchange of international telegraph messages between points within Canada and points outside Canada, excluding continental U.S. This agreement currently is being reviewed with a view of superseding it by a new one.

Additionally, the following subsidiaries of U.S. companies providing international telegraph service in competition with COTC arrange settlements as follows:

Commercial Cable Co. (CCC)

For the exchange of telegraph traffic with foreign administrations, CCC, Montreal settles its accounts with CCC, London, England, who in turn settles with the foreign administration.

Settlement rates between CCC, Montreal, and CN/CP are the same as for the COTC-CN/CP settlements.

Conditions are covered by an agreement dated January 8th, 1970, providing for the exchange of international telegraph messages between points within Canada and points outside Canada excluding continental U.S. and Mexico.

Western Union International Inc. (WUI)

For the exchange of telegraph traffic with various foreign administrations, WUI, Montreal settles its accounts generally on the basis of equal division of the tolls after the deduction of terminal and transit charges.

Accounts are prepared monthly and settled quarterly with foreign administrations, and monthly with CN/CP, and COTC.

Settlement rates between WUI and CN/CP are the same as for the COTC-CN/CP settlements.

Conditions are covered by a 1969 agreement providing for the exchange of international telegraph messages between points within Canada and points outside Canada, excluding continental U.S. and Mexico.

Radio Corporation of America (RCA) - COTC

COTC have a telegraph traffic interchange arrangement with RCA, New York which is authorized annually by the Minister of Communications, in order to enable COTC to reach countries (Appendix A) not accessible by its own facilities or through those of the Commonwealth System.

There is no evidence of a formal agreement covering or setting out conditions and settlements.

Telex

COTC - CN/CP

Settlements between COTC and CN/CP are based on a payment by COTC of a terminal share of 30 cents per minute.

Conditions are similar to those under Telegraph Service.

Settlements are on a monthly basis and are covered by an agreement dated 26 October 1966, providing for the exchange of all manner of trans-oceanic and intercontinental telecommunications service employing any frequency bandwidth now in use or to be

developed in future, other than international telegrams and telephone calls.

Additionally, COTC have Telex traffic interchange arrangements with ITT, New York, RCA, New York and WUI, New York in order to reach countries (Appendix A) not accessible by its own facilities or through those of the Commonwealth.

COTC - ITT

Settlements between COTC and ITT, New York are arranged through the Canadian subsidiary of ITT, namely CCC, Montreal.

The division of tolls on each Telex call is patterned according to the collection rate (i.e. rate charged to the public) based on COTC receiving a terminal share out of the applicable 3-minute unit charge.

Accounts are settled quarterly in accordance with statements prepared by COTC.

The COTC-ITT (via Commercial Cable Co.) arrangement is authorized annually by the Minister of Communications.

COTC - RCA

Settlements between COTC and RCA, New York are settled quarterly in accordance with statements prepared by COTC.

The division of tolls on each Telex call is patterned according to the collection rate (i.e. rate charged to the public) based on COTC receiving a terminal share out of the applicable 3-minute unit charge.

The COTC-RCA arrangement is authorized annually by the Minister of Communications.

COTC - WUI

Settlements between COTC and WUI are arranged through the Canadian subsidiary of WUI in Montreal.

The division of tolls on each Telex call is patterned according to the collection rate (i.e. rate charged to the public) based on COTC receiving a terminal share out of the applicable 3-minute unit charge.

Accounts are settled quarterly in accordance with statements prepared by COTC.

TWX

COTC - TCTS

Monthly settlements are made between the TCTS and COTC for international TWX connections routed over facilities of the COTC. This includes Canada - Mexico TWX. Revenues accrue to the TCTS on the basis of a flat rate per minute. The net balance of revenue applicable to inward and outward business, is paid to COTC each month by Bell Canada in its capacity as agent for the TCTS.

Station charges are retained by the providing party and are not subject to division.

Private Line Service, Including TV and Program Service

Settlement between COTC and various domestic carriers is based on the latter receiving their leased circuit tariff for facilities provided up to the COTC gateway at Montreal or Vancouver.

In the case of Trans-Atlantic telecasts, the domestic carrier receives his required Canadian tariff to the COTC earth station at Mill Village, N.S. For Pacific telecasts, both Canadian and U.S. domestic carriers receive their respective share of the domestic tariff for facilities provided by each of them up to the earth station at Jamesburg, California, through which COTC has access for such Pacific telecasts.

An agreement exists between COTC and CN/CP dated October 26, 1966, providing for the exchange of all manner of trans-oceanic and intercontinental telecommunications service employing any frequency bandwidth now in use or to be developed in the future, other than for international telegrams and telephone calls.

SETTLEMENTS

Public Telephone Service

TCTS - AT & T

Monthly settlements are made between the TCTS and the AT & T Co. for connections between Canada and the United States (except Alaska and Hawaii but including Mexico) on the basis of Canadian billed revenues, using ratios established from periodic joint studies of revenues, expenses and book costs assigned to this service.

These studies are used to determine the percentage of the total revenue which will accrue to each party. This percentage is applied to the total revenues each month in the interval between cost separation studies to achieve the division of revenues.

Alaska and Hawaii settlements are made in the same manner as defined under International No. 1.

TCTS - Other Canadian Domestic Carriers

These services are usually settled as a part of the settlement for the total interchange of services, domestic and international, between the individual members of TCTS and the other carriers. Where specific settlement arrangements do exist between TCTS and other domestic carriers for these services, they are commission and prorate type division of revenues settlements.

Public Message Telegraph Service

CPT - Western Union Telegraph Co.

Settlements between CPT and the Western Union Telegraph Company in the U.S. are covered in an agreement dated October 1st, 1933, originally executed between CPT and the Postal Telegraph Company; the latter having been purchased by Western Union in 1943.

This agreement extended by the Memo of Understanding of 1943 - see notes ahead, provides that commercial telegraph and ship wireless business between CPT facilities in Canada and those of Western Union in continental United States shall be interchanged exclusively between the two parties, including all radio and cable messages (described in a schedule to the agreement) which either party is able to obtain or control, (and/or are) directed to the facilities of the other party. The Schedule includes "Mexican offices" in the list of interchange items.

The division of landline tolls is currently $49\frac{3}{4}$ - $51\frac{1}{4}$ between the two parties and can be revised by mutual consent.

CNT - Western Union Telegraph Co.

Settlements between CNT and the Western Union Telegraph Company in the U.S. are covered by an agreement dated January 1st, 1915 originally executed between a first party of Canadian Northern Telegraph Company and the Great North Western Telegraph Company and Western Union as the second party.

This agreement (expiring in 1978) provides for the exchange, exclusively each with the other of all communications business destined to each other's territory, and is said to contain provisions about Mexican traffic similar to those in the CPT/Western Union Telegraph Co. agreement.

The division of landline tolls is currently 46% CNT and 54% Western Union.

CN/CP - Western Union Telegraph Co.
Memo of Understanding

Both of the foregoing agreements have been modified by a Memorandum of Understanding between CN/CP and Western Union Telegraph Co. dated July 6th, 1943. This memorandum has been renewed at intervals; the latest being on August 1st, 1966 extending the present interconnection arrangement to December 31st, 1971.

CNT - Alaska Communications System (ACS)

Settlements between CNT and the ACS are based on CNT retaining all of the Canadian portion of the toll; remitting the remainder to ACS after deducting and remitting the "other line" portions to other Canadian companies when they are involved. CPT do not interchange with ACS.

Interchange and settlement arrangements covered by exchange of letters.

Telex

Settlements between CN/CP with the Western Union Telegraph Company in the U.S. are based on Western Union retaining 100 percent of the amount collected on calls from U.S. to Canada: CN/CP doing the same on calls from Canada to the United States.

Station charges are retained by the providing party and are not subject to division. A fixed rate exists from any point in Canada to any point in Mexico.

Settlements between the Western Union Telegraph Company, and CN/CP, and the Mexican Administration are based on a three-way split of the tolls.

Interchange and settlement arrangements are covered by an exchange of letters.

TWX

TCTS - AT & T

Monthly settlements are made between the TCTS and the AT & T for TWX connections between Canada and the coterminous U.S. excluding Mexico. Revenues are divided on a commission and pro-rate plan of settlement. Amounts due are netted against those due for telephone service and are included in the one payment described above. Station charges are retained by the providing party and are not subject to division.

Private Line Service (including TV and Program Service)

Private line services to or via United States points are billed in Canada to or from the Canadian border crossing point. This revenue is distributed by TCTS to the telephone companies involved.

Similar settlement is followed by CN/CP in their provision of private line service. In the case of Broadband Exchange Service connections between CN/CP and the Western Union Telegraph Company in the U.S., settlements are on the basis of a pro-rate of the line haul.

Arrangements are covered by an exchange of letters.

Particular Items Drawn to Attention By Telecommission Project 3E Team

Telephone

1. As and when Canadian facilities become economicably available, present routes via AT & T to points outside U.S. should be replaced by routes with maximum Canadian content.

2. An objective should be to establish International Direct Distance Dialling (I.D.D.D.) outward from Canada via COTC to all countries able to accommodate such service.

3. Regular co-ordination should be stablished between the International and Domestic Carriers to ensure that the high standards and procedure apply in equal measure to the external and internal telecommunication services.

4. Canada's International Carrier (COTC) as a participating member of the Commonwealth bodies and International Agencies established to promote the development of technical facilities and their efficient operation should continue to co-operate with its International counterparts ensuring conformity with International requirements and ITU Regulations and Recommendations to further improve the existing high quality performance International service.

5. As approved by the Canadian Government, the following common carriers: - the Canadian Overseas Telecommunication Corporation, the Telephone Association of Canada (embracing TCTS and other TAC members) and the Railway Association of Canada (embracing CNT/CPT) participate in the work of many Study Groups of the I.T.U. Consultative Committees (CCITT and CCIR) as recognized private operating agencies.

6. The present overseas rate Canada - St. Pierre/Miquelon should be replaced by a rate comparable to domestic rates.

7. Existing rates Canada - Alaska and Canada - Hawaii, now under review, should be aligned with the Canada - U.S. rate structure.

8. Present Canada - Mexico end-on-end rates should be reviewed with the object of establishing a "through" rate.

Telex

9. Interworking between Canadian Telex and U.S. TWX networks is being developed.

10. Canada - Mexico telex service now handled by CNT/CPT/ Western Union via U.S. should be examined in collaboration with COTC from the standpoint of rates and routing.

11. Fully automatic Telex service to all countries should be provided to those countries that can accommodate this operation.

12. Telex calls dialable from Canada to countries other than the U.S. and Mexico follow an all-Canadian route (i.e. not via the U.S.) where this is economically feasible. This procedure is covered by agreements between CCTC and CNT/CPT.

13. As and when Canadian facilities become economically available, present telex routes via the U.S. should be replaced by routes with maximum Canadian content.

Telegraph

14. Ideally, service to and from all foreign countries should be provided through CCTC arrangements to achieve maximum Canadian content.

15. The make-up and tariff listing of rates for Canada - Alaska traffic and Canada - St. Pierre/Miquelon traffic should be examined.

General Observations

By Trans-Canada Telephone System

Factors Affecting Canada-International Telephone Service

In order to make overseas service more similar to that encountered domestically and to the U.S. by Canadian users, the following factors must be overcome. It must be recognized that many if not all, of these items are beyond the direct control of any Canadian carrier.

There must be sufficient circuits to provide the objective grade of service all the way to the terminating overseas customer.

Ringdown circuits and manual switching must be replaced by automatic operation.

H-F radio circuits must be eliminated.

Operating methods must be improved in some countries to reduce non-productive circuit holding time.

There must be agreement on operating procedures with foreign administrations.

Standard policies with respect to collect, credit card and station calling are required.

Standard numbering plans and routing methods must be utilized.

Tone differences must be resolved so customers and operators will be able to interpret line busy, no circuit, etc.

24-hour service should be provided in all areas.

Factors Affecting Canada - U.S. Telephone Service

Main factors which have facilitated the provision of the existing high level of service to the U.S. are the following. It must be realized that the nature of some of these factors is such that they cannot be applied in other types of international service.

Fully integrated Canada - U.S. toll network
Provision of circuits to meet the traffic flow as determined by studies
Automatic alternative routing of calls
A common numbering plan
A common operator language
Compatible standards of service
Common operating practices
Changes are made in an orderly manner with agreement between all concerned and arrangements are made to cope with differences where they must exist so the service does not suffer.

The desire of the Canadian telephone industry is to establish the long range objective of making overseas service as similar as possible to North American levels of service which have been reached through the high degree of planning and co-ordination of network administration, provisioning and operating procedures between members of TCTS and U.S. organizations.

Before this objective can be realized, a similar degree of co-ordination, planning and control in the overseas field is required.

The far greater difficulties in dealing with many and varied foreign administrations, than in dealing with the U.S. alone are recognized as significant impediments to the development of similar degrees of co-ordination, planning and control as desired.

Observations by Electronic Industries Association (Canada) Regarding the Nature of the Market

The EIAC representative pointed out the increasing interest in off-shore markets for data sets, particularly those which make optimum use of the voice-band, by airlines (for passenger and freight data), and in connection with the tie-in between hotels and travel agencies, international banks and brokerage houses, and multi-national corporations. Increased business interest in existing services, and new services such as picturephone, is likely to be stimulated more by lower rates than by new devices.

Since long distance service costs tend to go down due to the decreasing cost per circuit mile as the quantity of circuits increase, a reduction in rates and a stimulation in traffic due to this could therefore be looked upon as a substantial incentive to increased use.

Appendix "A"

TELEX ROUTED VIA NEW YORK

(Normal routes only)

RCA	ITT	WUI
Dominican Republic (326)	Dominican Republic (346)	Colombia Republic
Guam	Ecuador (353)	Hawaii (632)
Guatemala	Haiti (349)	Panama (638)
Haiti (329)	Hawaii (743)	
Hawaii (723)	Nicaragua (2-3 digits)	
Mexico (Canadian TWX only)	Puerto Rico (345)	
Nicaragua (2-3 digits)	Salvadore, el	
Ryukyu Islands	Virgin Islands (347)	
Samoa (American)		

TELEGRAMS ROUTED VIA NEW YORK

(Normal route only)

RCA

Antarctica - Little America, McMurdo Sound
Caroline Island
Colombia Republic
Guam
Johnston Island
Mariana Island - Saipan
Marshall Island
Midway Island
Ogasawara Island
Venezuela
Wake Island

ITT and WUI

Nil

Appendix "B"

DIRECT NORMAL TELEX ROUTINGS

Argentina	Germany - West	Portugal
Australia	Hong-Kong	Sweden
Austria	Iceland	Switzerland
Barbados	Italy	Trinidad
Belgium	Jamaica	United Kingdom
Bermuda	Japan	U.S.S.R.
Brazil	Netherlands	Vatican City
Denmark	New Zealand	
Finland	Norway	
France	Peru	

Appendix "C"

CANADIAN OVERSEAS TELECOMMUNICATION CORPORATION

LIST OF EXISTING AND PROPOSED EARTH STATIONS THROUGH 1972
ATLANTIC REGION SATELLITE

	COUNTRY	STANDARD STATION	DATE OF OPERATION
1.	ALGERIA	X	1972
2.	ARGENTINA	X	15 September 1969
3.	BRAZIL	X	22 February 1969
4.	CAMEROON	X	1971 (July)
5.	CANADA		
	Mill Villiage 1	X	24 October 1966
	Mill Villiage 2	X	29 January 1969
6.	CHILE	X	22 July 1968
7.	COLOMBIA	X	1970 (March)
8.	ECUADOR	X	1971
9.	ETHIOPIA	X	1971
10.	FRANCE		
	Pleumeur Bodou 1	X	28 June 1965
	Pleumeur Bodou 2	X	3 November 1969
	Martinique	X	mid-1971
11.	GERMANY		
	Raisting 1	X	28 June 1965
12.	GREECE	X	1970 (April)
13.	IRAN	X	4 October 1969
14.	ISRAEL	X	1972
15.	ITALY		
	Fucino 1	Non-standard	28 June 1965
	Fucino 2	X	17 August 1967
16.	IVORY COAST	X	1971
17.	JAMAICA	X	1971 (February)
18.	JORDAN	X	1970 (October)

	COUNTRY	STANDARD STATION	DATE OF OPERATION
19.	LEBANON	X	7 September 1969
20.	MEXICO	X	13 January 1969
21.	MOROCCO	X	1969 (November)
22.	NETHERLANDS	X	1972 (4th Quarter)
23.	NIGERIA 1	X	1970 (4th Quarter)
24.	PANAMA	X	7 September 1968
25.	PERU	X	3 July 1969
26.	SAUDI ARABIA	X	1971
27.	SCANDINAVIA		
	Tanum, Sweden	X	1971 (4th Quarter)
28.	SENEGAL	X	1971
29.	SPAIN		
	Canary Islands 1	Non-standard	7 April 1967
	Canary Islands 2	X	1971
	Buitrago 1	X	11 January 1968
30.	SUDAN	X	1972
31.	SWITZERLAND	X	1972
32.	TRINIDAD AND TOBAGO	X	1971 (April)
33.	TURKEY	X	1972
34.	UNITED ARAB REPUBLIC	X	1972
35.	UNITED KINGDOM		
	Ascension Is.	Non-standard	7 April 1967
	Goonhilly 2	X	26 November 1968
36.	UNITED STATES		
	Andover	Non-standard	7 April 1967
	Andover	X	28 June 1965
	Etam, W. Va.	X	6 January 1969
	Cayey, P.R.	X	25 January 1969
37.	VENEZUELA	X	1970 (4th Quarter)

Appendix "C"

LIST OF EXISTING AND PROPOSED EARTH STATIONS THROUGH 1972
PACIFIC REGION SATELLITE

	COUNTRY	STANDARD STATION	DATE OF OPERATION
1.	AUSTRALIA		
	Carnarvon 1	Non-standard	4 February 1967
	Carnarvon 2	X	1 October 1969
	Moree	X	23 May 1968
2.	CHINA (Republic of)	X	1969 (4th Quarter)
3.	JAPAN		
	Ibaraki 2	X	26 March 1968
4.	KOREA (Republic of)	X	1970 (February)
5.	NEW ZEALAND	X	1970 (4th Quarter)
6.	PHILIPPINES		
	Tanay 1	X	28 April 1968
7.	THAILAND		
	Si Racha 1	X	8 April 1968
8.	UNITED KINGDOM		
	Hong Kong 1	X	6 September 1969
9.	UNITED STATES		
	Alaska	X	1970 (July)
	Brewster	X	8 December 1966
	Guam (Pulantat)	X	1969 (November)
	Jamesburg, Calif.	X	1 December 1968
	Paumalu	Non-standard	3 December 1966
	Paumalu 1	X	8 December 1966
	Paumalu 2	X	1 December 1968
10.	VIET NAM (Republic of)	X	1970

Appendix "C"

LIST OF EXISTING AND PROPOSED EARTH STATIONS THROUGH 1972
INDIAN OCEAN REGION SATELLITE

	COUNTRY	STANDARD STATION	DATE OF OPERATION
1.	AUSTRALIA		
	Ceduna	X	1969 (November)
2.	BAHRAIN	X	14 July 1969
3.	EAST AFRICA		
	(KENYA)	X	1970 (May)
4.	GERMANY		
	Raisting 2	X	10 October 1969
5.	INDIA	X	1970 (January)
6.	INDONESIA		
	Djatiluhur 1	X	19 September 1969
7.	ITALY		
	Fucino 3	X	1970 (2nd Quarter)
8.	JAPAN		
	Yamaguchi	X	1 July 1969
9.	KUWAIT	X	20 October 1969
10.	LEBANON	X	1970 (3rd Quarter)
11.	MALAYSIA	X	1970 (March)
12.	NIGERIA 2	X	1971
13.	PAKISTAN		
	East	X	1971
	West	X	1971
14.	PHILIPPINES		
	Tanay 2	X	1970
15.	SINGAPORE	X	1970 (December)
16.	SPAIN		
	Buitrago 2	X	1970 (April)

LIST OF EXISTING AND PROPOSED EARTH STATIONS THROUGH 1972
INDIAN OCEAN REGION SATELLITE

	COUNTRY	STANDARD STATION	DATE OF OPERATION
17.	THAILAND		
	Si Racha 2	X	1969 (November)
18.	UNITED KINGDOM		
	Goonhilly 1	X	1 July 1969
	Hong Kong 2	X	1971 (February)
19.	ZAMBIA	X	1971

Appendix "C"

The following countries have expressed an interest in operating an earth station but have not announced definite plans:-

ATLANTIC REGION

1. Barbados
2. Belgium
3. Bolivia
4. Central America (location not known)
5. Congo (Kinshasa)
6. East Africa (Kenya) #2
7. Kuwait #2
8. Malagasy Republic
9. Paraguay
10. Uruguay
11. Yugoslavia

PACIFIC REGION

Indonesia

INDIAN OCEAN REGION

Ceylon
South Africa

COUNTRIES SERVED WITHOUT USING A CANADIAN GATEWAY OFFICE

The following countries are served by the Trans-Canada Telephone System via the U.S.A., A.T. and T. overseas network. The Canadian Toll Center operator forwards the call to the American Gateway office for ticketing and handling. The Physical route of the actual circuits used are those normally used by the Toll Center to reach the gateway shown.

Country	Only Route Via Foreign Gateway Office At
Angola	New York
Azores	" "
Bolivia	" "
British Honduras	Jacksonville
Cape Verde Islands	New York
Colombia	" "
Costa Rica	Jacksonville
Cuba	Miami
Ecuador	New York
Guam	Oakland
Guatemala	Jacksonville
Haiti	Jacksonville
Honduras	Jacksonville
Indonesia	Oakland
Luzon Island	Oakland
Madeira Islands	New York
Mindanao Island	Oakland
Mozambique	New York

COUNTRIES SERVED WITHOUT USING A CANADIAN GATEWAY OFFICE

Country	Only Route Via Foreign Gateway Office At
Netherlands Guiana	New York
Nicaragua	Jacksonville
Panama	New York
Peru	" "
Philippines	Oakland
Salvador, El.	Jacksonville
Saudi Arabia	New York
Surinam	" "
Venezuela	" "

The following countries are reached over A.T.&T. overseas network facilities but the tickets are written and the route is dialed by the Originating Toll Center operator. The Physical route of the actual circuits used are those normally used by Toll Center to reach the "gateway" shown.

Country	Physical Circuit Route Is Via Foreign Location At
Bahamas	Jacksonville - Nassau
Dominican Republic	Jacksonville - Santo Domingo
Midway	Sacramento - Honolulu
Virgin Islands	Jacksonville - Charlotte Amalie
Wake	Sacramento - Honolulu

Some Aspects of Foreign Ownership and Interest

The Project Team also gave consideration to some questions, outside its original terms of reference, posed by Professor Hugh Lawford, of Queen's University, as follows:

> "Foreign Exchange and other Laws for the Protection of Balance of Payments and their Application to International Communications.
>
> What techniques can be devised to frame laws based on adequate assessments of cross-subsidization among various communication activities? Can laws require complete financial disclosures by companies operating multi-nationally?"

Professor Lawford furnished the following four-part elaboration of this question.

Part I

> "What agreements are there between Canadian and U.S. common carriers for the provision of technical advice and know-how, or for the conducting of research and development, or for the licensing of patents? Do any agreements have the effect that one class of telephone users -- for example, normal telephone subscribers -- is subsidizing another class of telephone users -- for example, computer service bureaus insofar as they demand development of new techniques or new hardware? Do any agreements have the effect that users in one country subsidize research or development primarily of benefit to users in the other country? What effect have relationships between carriers in Canada and the United States upon the balance of payments between the two countries?"

Part 2

> "Where the bulk of common carrier revenue is based upon long distance charges, and where the calls normally are placed between Canada and the United States, what system now exists for apportioning revenues between U.S. and Canadian carriers? Does this take account of the fact that the provision of new facilities -- for example, new lines to a newly developed mining area or tourist area -- may fall upon the Canadian carrier almost exclusively? For example, the extension of telephone services to cottages in some

remote areas of Canada results primarily in generating long distance calls by the American tourists back to the United States. Is Canada a net loser on providing these additional facilities? "

Part 3

"Do Canadian-American military activities requiring telecommunications have the effect that military expenditures subsidize the extension of telephone service into remote areas, or subsidize the development of new communications techniques?"

Part 4

"Where a Canadian carrier is a subsidiary or is wholly or partially controlled by a foreign company, what legal powers do Canadian governments have to require disclosures of financial transactions by the parent or controlling company or between parent and subsidiary company?"

TCTS and CN/CP examined these questions and their views are summarized as follows.

The British Columbia Telephone Company and Quebec Telephone have service agreements with their U.S. parent organization, General Telephone & Electronics Corporation. Bell Canada has a similar service agreement with AT & T in the U.S. These agreements provide the Canadian companies with technical advice, consultations, engineering assistance, and operating and maintenance practices. There are no R&D agreements between Canadian and U.S. telephone companies but cross-licensing and cross-patenting exists between Canadian and U.S. Manufacturers of telecommunications equipment. CN/CP have no agreements with any U.S. carrier other than for traffic routing and handling, and division of revenues.

Dealing with the question of cross-subsidization, the Canadian carriers say there are no agreements causing one class of service to subsidize another.

CN/CP consider that their payments to U.S. carriers (not in excess of $200,000 annually) have very little effect on the balance of payments between Canada and U.S. TCTS relationships with AT & T have resulted in a division of revenue which TCTS consider to be reasonable and satisfactory.

The question about the apportionment of revenue between Canada and U.S. carriers is covered in general terms in the Telecommission Project 3E Report under the section entitled "Settlements".

The telephone industry believes that the net effect of providing service to American tourist cottages would be beneficial to Canada. In some cases, extension of service to these locations is undertaken through a contribution from the customer, as in cases where new facilities involve substantial expenditure for private business concerns, e.g. in mining areas or remote tourist areas where adequate revenue prospects are not good. Canadian and U.S. military requirements have helped extend facilities into remote areas earlier than otherwise would have been the case. Construction charges to the military are proportioned in cases where commercial potential is foreseen or commercial usage of such facilities occurs.

Project Team members were not able to say what legal powers enable the Canadian Government to require disclosure of financial transactions by the parent, subsidiary or controlling companies. This is a matter for review by legal experts.