2/ COMMUNICATIONS IN LABRADOR: parts.

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Communications Canada
Atlantic Region
Moncton, N.B.
January, 1974

COMMUNICATIONS IN LABRADOR

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I INTRODUCTION

FOCUS ON COASTAL LABRADOR

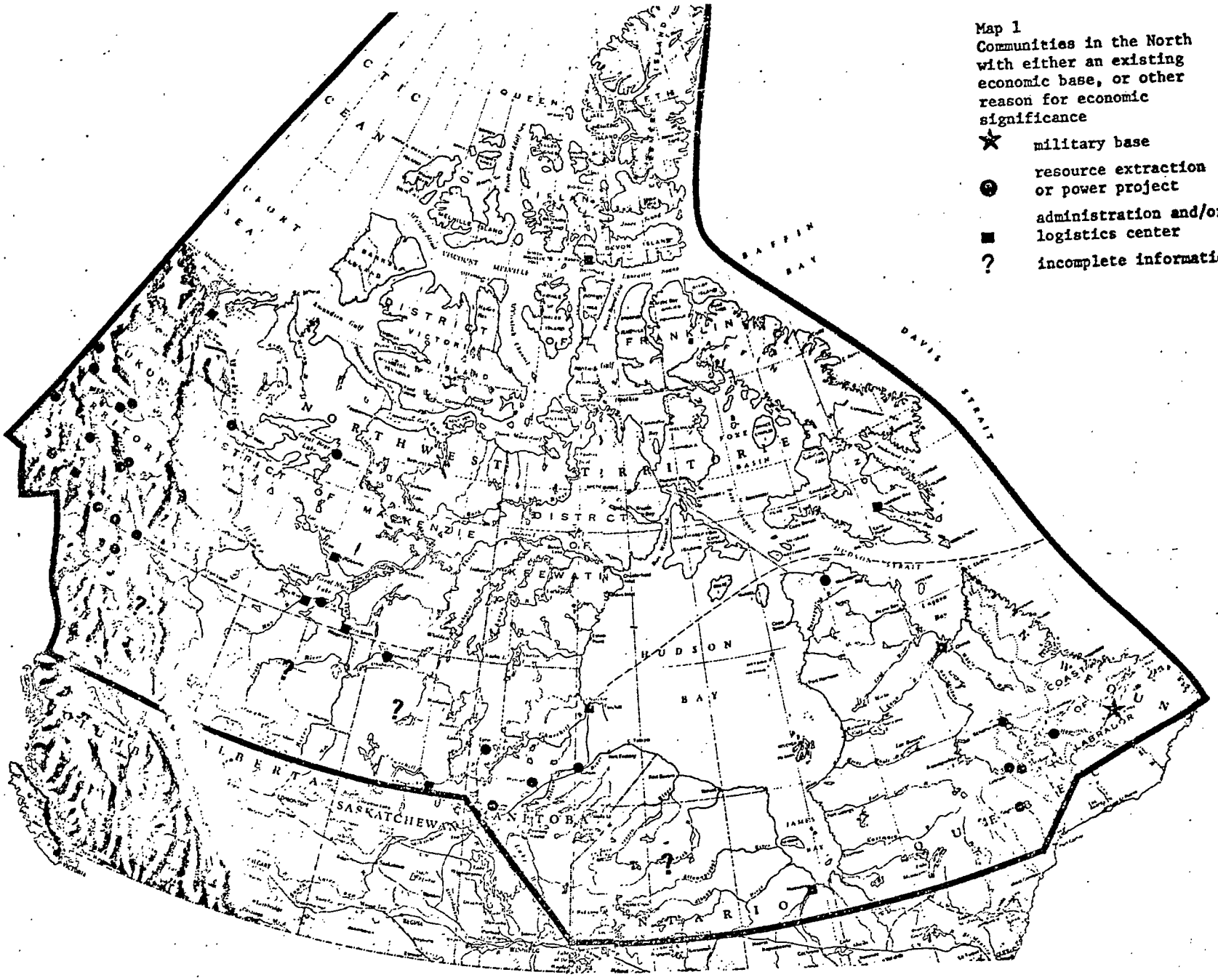
The southern boundary of Labrador lies in about the same latitude as Saskatoon, and most of Labrador is below the 60th parallel, which is the northern boundary of the four western provinces. Nevertheless its terrain and climate, and certainly its communications characteristics, make Labrador truly part of the Canadian north.

The telecommunications report Instant World states:

> "... it is necessary to attempt a definition of 'the North' which can be related to common telecommunications problems. The southern boundary of the Yukon and Northwest Territories lies, for the most part, along the 60° parallel of latitude. But the climatic and social characteristics of the North are equally to be found far south of the political boundary between the Territories and the Provinces. The general inadequacy of communications extends southwards to about the 55° parallel, which traverses seven Provinces. It is estimated that about 50,000 people live in the Territories, and another 196,000 in the belt between the 55° and 60° parallels under very similar conditions." (1)

Although the definition of the "North" is a contentious issue, the Arctic Institute of North America has provided a cartographic definition in its study Man in the North.

> "What is the boundary of this 'North' we are talking about? There is no specific political boundary defining Canada's North. The Province of Manitoba Royal Commission Inquiry into Northern Transportation suggests, for its report, a southern boundary for the North reflecting 'the limits of continuous population distribution and continuity of the transport and communications system.' This is the definition that has been adopted by the MIN Task Force on Communications and its interpretation is reflected in the dark line cutting across Map I from east to west. The exact location of this line is of course subject to debate; some may argue that it should lie a few miles more to the north or to the south


Map 1
Communities in the North with either an existing economic base, or other reason for economic significance
military base
resource extraction or power project
administration and/or logistics center
incomplete information
BEAUFORT SEA
QUEEN ELIZABETH ISLANDS
BAFFIN BAY
DAVIS STRAIT
DISTRICT OF MACKENZIE
DISTRICT OF FRANKLIN
NORTHWEST TERRITORIES
HUDSON BAY
HUDSON STRAIT
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
LABRADOR

in certain places. Universal agreement is not possible or necessary for the purposes of this study; the location of the line is sufficiently accurate to derive valid conclusions." (2)

The study goes on to highlight communications conditions in the north that emphasize Labrador's deficiencies in this field.

"In the centers shown on Map I live some 100,000 persons, mostly white and often transient. The communications in these centres are generally very good. Almost all the locations shown on Map I have conventional local and long-distance telephone service. Almost all have broadcast radio stations, and many have television stations. But of the North's 250,000 people, many--perhaps the majority--do not reside in these locations of efficient and conventional communications. Large numbers live away from these centres in much more primitive surroundings, often with no broadcast radio station, no television, no telephone (except perhaps radio telephone), and in many cases no access roads." (3)

Settlement in Labrador has taken place in three separate areas: the new iron-ore communities and hydro power sites of the western plateau, the military-based area around Goose Bay in the south centre, and the fishing villages scattered along the Atlantic coast. The new mining towns have good communications, installed for economic reasons. The Goose Bay area has modern communications, installed to meet military needs. <u>The coastal area has poor communications, and this is the area which will be the principal focus of the present study.</u>

REASONS FOR THE PRESENT STUDY

This latest, and hopefully, "final" study of Labrador's communications needs and problems has been found necessary for several reasons. Over the years there has been a rising tide of complaints from residents and elected representatives of coastal Labrador about various aspects of the communications systems operating there. This is only to be expected, as increased contact with the rest of Canada, and the beginnings of economic development help to create rising aspirations and expectations as well as growing communications needs among the population of coastal Labrador. Mr. William Rompkey, M.P., who represents Labrador in the House of Commons, put itsuccinctly in a letter to the Hon. Gérard Pelletier, Minister of Communications:

"I feel that if communities on the Labrador Coast are to be brought into the twentieth century they must at least have some way of communicating effectively with the outside world." (4)

In reply the Minister stated:

"... an in-depth study of the whole question of communications in Labrador is under way in our Atlantic Regional Office. We are now looking at various technical alternatives and their costs, after which we will be in a position to consider how to handle the financial problems that appear to be paramount under present conditions.

However, I fully agree with your viewpoint that the solution must not hinge on engineering economics only. The social and economic development of the whole coastal area must be taken into account when possible remedies are being considered." (5)

Moreover, although there have been numerous studies of communications in Labrador, many, if not most of these have been principally concerned with identifying and defining the problems. Some have gone on to make recommendations for improvement, but in rather general terms. The recommendations of the Memorial University study of 1970, which was carried out for this Department and Bell Canada, are an example:

"1. Establishment of a Communications Committee composed of one representative from each of the following communities - Port Hope Simpson, Cartwright, Makkovik, Hopedale and Nain. This committee could meet periodically with the various communications agencies. The expenses for such meetings should be met by these agencies. The representatives on the committee should be chosen by the people in the areas which they would represent, but they need not necessarily be native residents.

2. RT emergency equipment should be installed at Rexon's Cove, Norman Bay, North River and West Bay. One should also be available for Cready, so long as that station remains occupied by Newfoundland and Labrador fishermen.

3. Boosting of TV transmission from St. Anthony and Goose Bay to provide broadcast television for the Labrador Coast as soon as possible, should be considered as an interim measure until the satellite program will be able to fulfill this need.

4. All D.O.T. RT sets should be turned over to the operators who now have them on the coast. These operators should be licenced to use them for scheduled and emergency village-to-village communications. The cost of operation would be borne by the owners.

5. A toll-free zenith number should be established for phoning telegrams to CNT at Goose Bay from the Labrador Coast.

6. Public pay phones should be placed in Cape St. Charles, Battle Harbour, Square Island, and William's Harbour.

7. Static suppressors designed to cut out radio reception interference should be placed in power plants at Mary's Harbour, Fox Harbour, Port Hope Simpson, Cartwright, Makkovik, Postville, Hopedale, Davis Inlet and Nain.

8. A licenced, community-owned and operated AM radio station should be established at Nain, strong enough to reach from Saglek to Makkovik.

9. The CBC radio station at Frobisher Bay should be boosted to beam Northern News Service more effectively to the Labrador Coast.

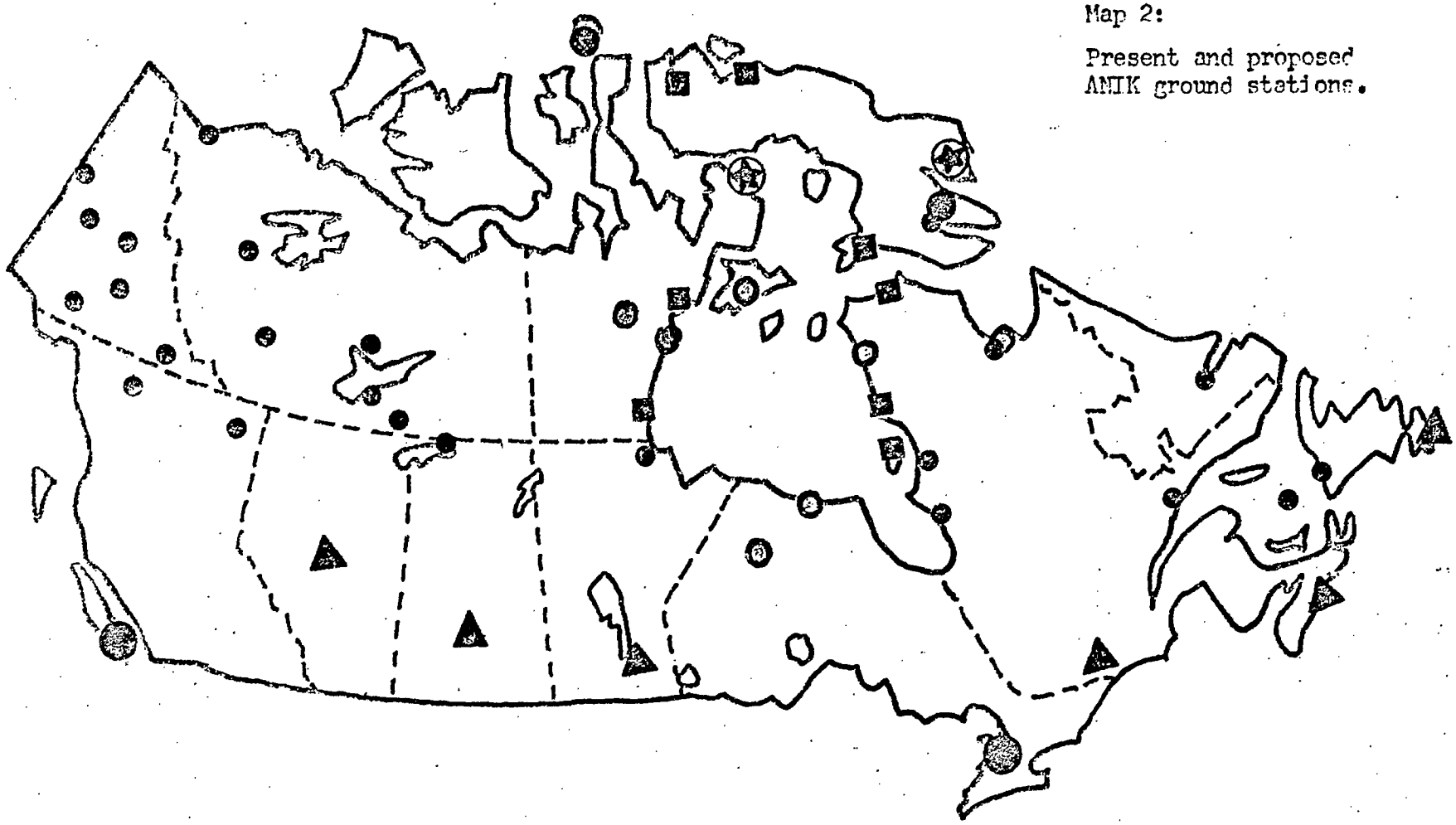
10. The feasibility of providing portable RT sets for the Arctic char fishing camps in the Torngat Mt. region, to feed through existing facilities at Saglek should be investigated.

11. A questionnaire survey should be conducted to determine the ship-to-shore radio needs of longliner fishermen on the Labrador coast. These longliners come mainly from St. Anthony, Anchor Point, Port au Choix and West Ste. Modeste in the Strait of Belle Isle area.

12. Year-round airmail service should be established to assure once weekly mail." (6)

Map 2:

Present and proposed
ANIK ground stations.



Heavy Route
Stations principales

Allan Park
Lake Cowichan

Network Quality TV
Stations pour les réseaux de télévision

Edmonton
Regina
Winnipeg
Montreal
St. John's
Halifax

Remote Television
Stations de télévision pour les régions isolées

Clinton Creek
Dawson
Elsa
Whitehorse
Faro
Watson Lake
Cassiar
Fort Nelson
Norman Wells
Fort Good Hope
Inuvik
Yellowknife
Pine Point
Fort Smith
Uranium City
Rankin Inlet
Sept-Iles
Churchill
Great Whale
Fort Chimo
Fort George
Goose Bay
Port-au-Port
Iles de la Madeleine
Frobisher Bay

Northern Telecommunications
Stations de télécommunications dans le Grand Nord

Resolute Bay
Frobisher Bay

Thin Route
Stations à faible trafic

Igloolik
Pangnirtung

Thin Route
Stations à faible trafic

*Scheduled for Service 1974/75
Mise en service prévu pour 1974/75

1974
Rankin Inlet
Fort Chimo
Baker Lake
Povungnituk
Winisk
Big Trout Lake
Coral Harbour

1975
Pond Inlet
Cape Dorset
Chesterfield
Port Harrison
Eskimo Point
Belcher Island
Great Whale
Sandy Lake

It may be noted that few of these recommendations were ever carried out. This has been a familiar fate of earlier studies. Because the present study is considerably more specific than its predecessors, it is to be hoped its proposals will make more definite action possible.

Thirdly, in the development of northern communications Labrador has heretofore received much less attention from the federal government than have most parts of the Yukon and North West Territories. An example is the Telesat communications system. As Map 2 demonstrates, present and proposed ground station sites do not include Nain, Hopedale and Makkovik, the largest settlements on the coast of Labrador, while communities of similar or smaller size in the western Arctic are included. (7)

Although the views expressed in the Telecommission studies are not necessarily those of the Department of Communications, Telecommission Study 8(c), on Northern Communications, points out:

> "Northern public telecommunications services are presently provided by two common carriers. North of 60° latitude C.N. Telecommunications serve the Yukon and that part of the Northwest Territories west of 102° longitude. Bell Canada provides public telecommunications services to the east of the 102° longitude in the Districts of Franklin and Keewatin.
>
> This division was apparently made to avoid destructive competition in areas where revenues were low. But it is an unusual division for the circumstances. On the one hand a Crown Corporation operates in an area which is rapidly becoming economically self-supporting while a private corporation serves an area where such a situation will not occur for a long time. Is this arrangement impeding the realization of improved telecommunication services throughout the Territories?" (8)

FEDERAL GOVERNMENT POLICY ON COMMUNICATIONS

It may be noted that a plan to improve coastal Labrador's communications is relevant to two broader aspects of federal government policy. The first is, of course, the communications policies and objectives that have been developing for some time, and that have been enunciated in the 1972 Green Paper and other public documents. The second aspect is the policies and programs to reduce regional disparities in Canada.

The Green Paper puts communications in its broadest national setting.

"In the very broadest terms, the objectives of Canadian communications policy, in which broadcasting policy plays a significant part, should be to:

- safeguard, enrich and strengthen the cultural, political, social and economic fabric of Canada;

- contribute to the flow and exchange of regional and cultural information;

- reflect Canadian identity and the diversity of Canadian cultural and social values;

- contribute to the development of national unity; and

- facilitate the orderly development of telecommunications in Canada, and the provision of efficient and economical systems and services at just and reasonable rates.

* * *

"It should also be emphasized that a national communications policy should ensure that federal and provincial aims and activities can be effectively harmonized. The definition of provincial objectives remains, of course, the responsibility of the provincial authorities. The Government is confident that the process of consultation proposed in this paper should make it possible to ensure that this harmonization will be achieved.

"In recent years, technological developments have been adding a new complexity to the concept of telecommunications. The vast expansion is the means of instantaneous transfer of information between all parts of the country not only helps to dispose of distance as an obstacle to national trade and commerce but provides new prospects for reducing regional disparities and developing the North." (8)

FEDERAL OUTLOOK ON NORTHERN COMMUNICATIONS:

The Government Organization Act, 1969, created the Department of Communications. Many studies, activities and programs have been carried on by the Department pertaining to communications in the North. A discussion of northern communications can be found in Government Activities in the North - 1972, published by the Department of Indian Affairs and Northern Development. This document is not a statement of policy. However, it describes some of the considerations that have served as guidelines in the evolution of communications programs in the North. It states, in part:

> "The north is an area to which the Department of Communications is devoting particular attention; studying the need of telecommunications, researching systems to meet those needs and coordinating and regulating the systems used by the telecommunications common carriers.
>
> Long-term Plans
>
> The aim of the department is to have communications frontiers extended northward so as to eliminate regional disparities and to provide telecommunications services of the same calibre as those in southern Canada. There are economic and political, as well as operational advantages in systems having full national coverage, because they have potential for achieving social unity".

****

Network Facilities Development

The objective for northern communications shall be to establish throughout the country basic services qualitatively defined as follows:

- Telephone communication of a quality normally available in urban communities, to provide:
  - 24 hours-a-day service,
  - demand access to virtually unlimited subscribers,
  - operation by the user without training or special procedures,
  - quality of performance which adequately stimulates direct person-to-person verbal contact.

- Radio broadcast service, with the technical capability of providing the appropriate mix of local and national network programing.

- Television service, to at least the level of ITU "Community Reception" if not "Individual Reception", i.e. the reception of transmissions from a broadcasting satellite by simple domestic installations possessing small antennae. This TV service would include regional services for educational and other purposes.

Social and Cultural Aims

The objectives will be:

- To apply communications technology generally to the special needs of remote and isolated communities with priority given to the needs of native peoples.

- To develop specific services for intra-community and inter-community communications, education, health and welfare - including the development and adaption of appropriate hardware.

- To develop within communities the technical capacity to produce such services as will further the cultural aspirations of native peoples.

Northern Development and Sovereignty

The proper exercise of sovereignty in the north requires telecommunications that are flexible in deployment and operation. Specifically:

- Able to provide on short notice basic communications service to anywhere in the north to standards similar to those available in the south.

- Able to provide telephone and message service to mobile parties anywhere.

- Sufficiently flexible for rapid expansion of communications facilities at any existing or newly established location.

Implementation Strategy

- To assess alternatives in planning the national communications network which will provide the mechanism for a proper balance of terrestrial and space systems to meet the many needs of northern communications.

- To rationalize Federal and Territorial, industrial and private communications needs and systems in the interest of more cost-effective and co-ordinated networks.

- Selection by the federal government of northern areas or communities suitable for field experiments in telecommunications so as to learn more about the desirable features of operational systems.

- Preparation of detailed plans for extending the domestic satellite communications configuration; in essence, an up-dating of plans to meet the objectives of the white paper on Satellite Communications.

- Strengthening of consultation with provincial and Territorial authorities on their needs for educational and general telecommunications and broadcasting services for remote areas." (10)

The Department is also empowered to join with provincial governments in carrying out its responsibilities. Section 10 (2) of the Act states:

> "(2) The Minister of Communications may, with the approval of the Governor in Council, enter into agreements with the government of any province or any agency thereof respecting the carrying out of programs for which the Minister is responsible."

PROVINCIAL GOVERNMENT INVOLVEMENT IN COMMUNICATIONS

The government of Newfoundland and Labrador has formed a Department of Transportation and Communications. The new department has not yet had time to develop comprehensive views and policies in the communications field. Since Labrador (except for Labrador City) has been served heretofore by Bell Canada, which is a federally regulated carrier, the provincial government has hardly been involved with the provision of telephone service in Labrador.

The Newfoundland Telephone Company, which is the largest telecommunications carrier on the island of Newfoundland, and in which Bell Canada is by far the dominant shareholder, has acquired Bell Canada's assets in Labrador as of January 1, 1974. This will bring telephone service in Labrador under the jurisdiction of the provincial Board of Commissioners of Public Utilities. The provincial government appears to favour having the whole province of Newfoundland and Labrador served by a single, provincially regulated carrier. However, this would mean that CNT, the other carrier on the island of Newfoundland, would have to be acquired by Newfoundland Telephone. CNT does not wish to follow Bell Canada's example and sell its assets in Newfoundland. This is due to CNT's forecast that their Newfoundland operation will have been profitable for the first time in 1973.

Bell Canada, by selling its assets to Newfoundland Telephone, has transferred an unprofitable territory to one of its subsidaries. However, Newfoundland Telephone rates are higher than those of Bell Canada. Local exchange rates are 20 to 30% higher and some toll rates are also 10 to 20% higher. In effect, this transfer of ownership of telecommunications assets in Labrador will ultimately mean higher rates to users in the area.

In its decision of December 7, 1973, the Board of Commissioners of Public Utilities ruled that changes in local rates would be subject to the upgrading of facilities in Labrador. Newfoundland Telephone has until June 30, 1974 to prepare an acceptable plan for this purpose.

Toll charges within Labrador, and between Labrador and the Island of Newfoundland will be reduced by the transfer. Toll charges between Labrador and points outside the province will in general be increased.

The Labrador Services Division of the provincial Department of Social Services and Rehabilitation operates its own HF radio system among its coastal depots. This system is also used to receive and deliver public telegrams via Hopedale to Goose Bay.

COMMUNICATIONS AND REGIONAL DEVELOPMENT

Telecommission Study 2(d), entitled Communications and Regional Development examined the relationship of telecommunications to economic disparities and regional development in Canada.

"First, given the vast expanses of Canada, importance of economic growth as a national goal, and major thrusts by the federal government in regard to regional expansion, there is the question of the adequacies of regulation with respect to telecommunications plant and capital requirements to support accelerated regional economic growth. Second, there is a need to ensure that new telecommunications policy will be consistent with existing policies directed towards the reduction of economic disparities and with overall economic and social objectives of the Government of Canada." (11)

The study then notes:

"While telecommunications may not have been either a prime cause or constraint to economic development they have been a very important catalyst for development and a vital part of the economic infrastructure." (12)

In an observation highly relevant to the Labrador coast, it is further noted:

"Telecommunications is, in a sense, a substitute for presence. Its availability in an underdeveloped area allows the user to overcome some of the disadvantages of distance. As the 'next best thing to being there' telecommunications can substitute for travel with an associated saving in time, cost and personnel. As a substitute for mails, telecommunications can act to save time and to speed up a decision making process. As a means of access to information, telecommunications can allow quick and frequent access, by managers and other users in a remote area, to the pools of information and talented advisors found in large population centers. ...Users in 'remote' areas tend to spend relatively more on long distance calling than do more centrally located users - either through more frequent use or through payment of higher service tariffs.

"It may be concluded that the efficiency of business operation and hence economic development in total is enhanced in those regions of economic disadvantage if telecommunications services are readily available at reasonable cost." (13)

The low density of population on the Labrador coast is discussed in Chapter II, below. Its relevance to the provision of telecommunications services is well stated in the same Telecommission study.

"The unit cost of telecommunications distribution services is inversely proportional to population density. Not only is the per circuit cost higher per unit of distance in rural areas, but also the distance between customers is much greater. The costs of telephone switching, on the other hand, are proportional to the total number of telephones located in a switching area and building and land costs tend to be higher in metropolitan areas. On balance, it would appear that total telephone costs are inversely proportional to population density. It is also apparent in the broadcasting industry that the costs per user served are higher in sparsely populated areas than in densely populated areas. It follows that, if equal telecommunications service is to be provided, the costs per capita will be higher in a region of dispersed population.

"By virtue of being relatively dispersed a rural population may be more dependent upon telecommunications than a more concentrated urban population. Radio and television, for example, are able to effectively counteract the time loss for physical distribution of news to a dispersed population, while the telephone can overcome the distance which otherwise would have to be travelled for social and economic contact." (14)

Finally, the study suggested the following steps should be taken:

"1) To ensure continuing and adequate telecommunications services at both National and Regional levels it is suggested that a principal objective of telecommunications policy be one of providing service on demand.

"2) It is suggested that the current policy of requiring economic justification as well as technical justification for issuance of radio licences be continued, but include reference in the administration of licencing policy under the Act to take into account regional differences.

"3) It is further suggested that the Department of Regional Economic Expansion in its policies on infrastructure give consideration to the provision of assistance to the telecommunications service industries where other programmes of that Department place undue stress on companies operating locally." (15)

REGIONAL DEVELOPMENT ACTIVITIES IN LABRADOR

Federal government activities to overcome regional disparities are the responsibility of the Department of Regional Economic Expansion. The department came officially into

existence on July 1, 1969, following several months of organization to bring together various agencies and programs relating to regional development. Existing measures were supplemented by two major new ones. One was the authority for the department to cooperate with provincial governments and with other federal agencies in preparing and implementing development programs to meet the particular needs of areas of lagging employment and income growth. The second was a program of providing financial incentives to encourage manufacturing and processing industries to establish or expand in areas that would benefit from the creating of additional employment. This program does not require provincial participation.

The Industrial Incentives program operates in what are called Designated Areas. The whole of the Atlantic Provinces except Labrador is a Designated Area. (see Attachment I) All other DREE programs operate in cooperation with or through the agency of a provincial government. One of these, the Special Areas program, helps to finance necessary infrastructure in the growth centers that are expected to attract industry. Happy Valley is the only one of Newfoundland's eight Special Areas that is in Labrador. Happy Valley, near Goose Bay, is not on the coast, and indeed, can be expected to attract population away from the coast to the extent that it is successful as a growth center.

New Regional Development Agreements under DREE are currently in process of negotiation with the provinces. It is probable that these will allow greater emphasis on the infrastructure type of development. If so, inclusion of communications development in the DREE program, as a very vital part of the infrastructure on the coast of Labrador, should be considered.

DREE has also inherited the outport resettlement scheme from the old federal Department of Fisheries. This program is largely financed by Ottawa, but Newfoundland administers it. The program has been declining in recent years. In fact, the resettlement of people from the smaller outports into larger centers began in the fifties, before the federal government became involved in the financing. The original program, designed chiefly for the island of Newfoundland, was applied to Nutak, in Labrador, in 1956, and to Hebron, in 1959. These two examples have caused some feeling against resettlement on the coast, because the receiving settlements were not adequately prepared, and because their resources were inadequate to support the newcomers.

Federal government funds have been available to the provincial government, through the federal Department of Indian Affairs and Northern Development and its predecessor departments,

for expenditure on health, welfare, housing and education for Indian and Eskimo communities. Because of the racial distribution of the population this has resulted in generally greater spending on community services on the northern part of the coast than on the southern part. These expenditures could best be described as maintenance of the communities and their populations; that is, they are not intended to develop the economy of the region.

The operation of the federal Department of Manpower and Immigration, and of the Unemployment Insurance Commission also fall into this "maintenance" category. Unemployment insurance is an important part of the income of coastal residents. They qualify for insurance by virtue of their fishing activities in the summer, and this qualification is as important a part of their livelihood as the income from the catch.

The placement operations of the Manpower office are hindered on the coast by communications problems. The office is in Goose Bay, and access to it by coastal residents is extremely difficult, involving an expensive, round-about journey, telephone contact that is often difficult, or long delays in mail contact. Here is an example of an essential service that could play a greater part in improving the life of coastal residents. Regardless of how effective the office itself may be, coastal residents are limited in their use of it because of inadequate communications.

ROYAL COMMISSION ON LABRADOR

On September 15, 1972, the government of Newfoundland and Labrador appointed a Royal Commission on Labrador. The Commission has studied many aspects of life in Labrador, and will make recommendations on future policies to be adopted by the province, concerning this area. Communications is one of the main items considered by the Commission. This will include telephone and telegraph services, private telecommunications, the mass media and postal services. It is expected that the Commission will present its final report to the provincial government early in 1974.

CHAPTER I - References

(1) Department of Communications; Instant World; Ottawa, 1971; page 143.

(2) Arctic Institute of North America; Man in the North, Part I; Montreal, September, 1971; page 7.

(3) Arctic Institute of North America; op. cit.; pp. 8-9 .

(4) Letter to the Hon.Gérard Pelletier, Minister of Communications, from Mr. William Rompkey, M.P., May 10, 1973.

(5) Letter to Mr. William Rompkey, M.P., from the Hon. Gérard Pelletier, June 18, 1973.

(6) Communications Needs on the East Coast of Labrador, a report prepared by the Extension Service, Memorial University of Newfoundland, for the Department of Communications and the Bell Telephone Co. of Canada; Labrador, 1970; pp. 32-3.

(7) Telesat Canada; Annual Report, 1972; Ottawa, page 24.

(8) Department of Communications; Northern Communications, Telecommission Study 8(c); Ottawa, 1971; page 10.

(9) Communications Canada; Proposals for a Communications Policy for Canada; Ottawa, March, 1973; pp.3-4

(10) Department of Indian and Northern Affairs; Government Activities in the North, 1972, Ottawa (draft text, May, 1973).

(11) Department of Communications; Communications and Regional Development, Telecommission Study 2(d); Ottawa, 1971; p.2

(12) ----------op. cit. page 24.

(13) ----------op. cit. pp. 24-5.

(14) ----------op. cit. pp.27-8.

(15) ----------op. cit. pp. 50-1.

II PHYSICAL, ECONOMIC AND SOCIAL BACKGROUND

GEOGRAPHY

Labrador is a roughly triangular territory lying between north-eastern Quebec and the Atlantic Ocean. Its area is 112,826 square miles, of which about 10 per cent is freshwater lakes. This compares with 43,359 square miles for the island of Newfoundland, and 51,963 square miles for the three Maritime provinces combined. Labrador contains 3 per cent of Canada's total area, while the island of Newfoundland contains 1.1 per cent, and the Maritime provinces together contain 1.4 per cent.

Labrador lies in the Canadian Shield, and its rugged terrain consists of low mountains interspersed with lakes and streams. The coastline is heavily indented by bays, fjords and the mouths of rivers. There are numerous rocky islands in these bays and scattered along the coast. Disregarding indentations, the coastline is about 800 miles long, and completely exposed to the open North Atlantic Ocean. Hamilton Inlet and Lake Melville, about one-quarter of the way "up" the coastline, give deep water access to the Goose Bay area 150 miles inland.

CLIMATE

Labrador lies approximately between 52° north latitude, or about the latitude of Saskatoon, and 60° north, which is the northern boundary of the four western provinces. Despite this, Labrador's topography and climate are distinctly northern. The coast, for example, is icebound more than half the year. The following table compares winter climatic data for Cartwright, on the southern part of the Labrador coast, with data for other locations in the Atlantic Provinces and for Ottawa. (1)

Location	Mean Temperature		Average Days of Freezing Temperature		Snowfall (inches)
	Jan.	July	Latest	Earliest	
Cartwright	7.5	55.7	June 23	Sept. 7	183.1
St. John's, Nfld.	24.3	59.7	June 6	Oct. 9	149.7
Charlottetown, P.E.I.	19.6	65.6	May 12	Oct. 17	105.0
Halifax, N.S.	26.0	65.3	May 1	Oct. 28	70.9
Saint John, N.B.	19.5	63.0	May 16	Sept. 30	97.7
Ottawa, Ont.	12.6	69.2	May 13	Sept. 28	86.1

SETTLEMENT PATTERN

The Labrador population of just over 28,000 inhabits three limited and distinctly different areas, separated by wild country across which aircraft provide the only reliable means of travel. As may be seen from Table 1, the bulk of the population is in the new mineral-oriented settlements in the west, and the establishment of these has provided most of Labrador's population growth in recent years. The Goose Bay - Happy Valley - North West River area, based on the military airfield, is second in size. The coastal settlements contain the smallest portion of the population, but cover the largest geographical area.

Table 1 also illustrates a basic characteristic of coastal settlement. The population lives in a large number of small settlements, ranging in size from Cartwright and Nain, with over 700 persons in each, down to some containing only three or four families. Many of the settlements are occupied only part of the year, the people moving close to their fishing grounds in summer, then back to more protected locations in winter.

COASTAL TRANSPORTATION (see also Attachment 2)

Except for a few of the most southerly locations, these settlements have no land contact with one another nor with the rest of Labrador. In summer the inhabitants can travel by small boat. In winter there is some movement by snowmobile on the shore ice. Labrador Airways, using float planes in summer and landing on the shore ice in winter, carry mail on a weekly schedule between Goose Bay and major coastal settlements, and also provide a charter air service. From Goose Bay, Eastern Provincial Airways make scheduled flights to the Maritimes, Newfoundland and Montreal.

A very few southern communities are linked to Newfoundland by a dirt road and a summer-only ferry service across the Strait of Belle Isle. Canadian National coastal ships link the larger coastal settlements with Newfoundland three or four times a month in summer. These ships are the only scheduled freight service for coastal communities. This means that all supplies and construction materials must be taken in, and all coastal products brought out during the short summer season.

All these transportation links operate at the mercy of weather conditions, and delays and interruptions are common all year round. Good communications are therefore an essential

supplement to the movement of persons and goods, to take care of delays, postponements, reorders, and alternative arrangements. Wherever possible, communications must take the place of personal travel. The communications system of coastal Labrador is an essential ingredient of daily living, in a way that is difficult to imagine when one lives among the easy alternatives of urban life "on the outside".

ECONOMIC DEVELOPMENT OF COASTAL COMMUNITIES

The life of the coastal communities is geared to a shore-based fishery. However, this is by nature an inefficient industry, and in any case can only be carried on during the summer months. One or two poor seasons can have long-term crippling effects financially on the fisherman. Moreover, the welfare efforts of the provincial government, plus the increasing contact with the "outside", is gradually transforming the "do-it-yourself", pioneering lifestyle of the coast into one increasingly dependent on cash income. The result is that fishing is important, not only for the value of the catch, but also as a means of qualifying for unemployment insurance stamps. When entitlement runs out, and for those who cannot qualify, welfare is a ready resort.

Cod is the principal on-shore fish catch, but substantial quantities of arctic char and salmon are also taken. Cod is not a high-value catch, and in recent years the catch has been very small. Char and salmon are gourmet fish, but the value of this catch is entirely dependent on its quality. This, in turn, depends on such factors assupplies of ice for the fishermen, rapid and efficient collection, proper freezing and storage, and good marketing methods. None of these has been adequate in the past.

Opportunities for supplementary or alternative employment on the coast have so far been minimal. On the southern part of the coast there are stands of timber suitable for saw lumber and pulpwood, but no economic operation has yet been created. Farther north, near Cartwright, there is greater promise of a sustained operation to feed the pulp mill at Come-by-Chance. Although it is the largest community in southern Labrador, Cartwright has no primary economic base. Even those who fish move out to summer quarters to do so. On the northern section of the coast, handicrafts and trapping have provided supplementary income.

There appears to be substantial potential for mineral and off-shore oil development, but the location and especially the timing of specific exploitation depend on so many variables that they cannot be pinpointed. There is also some potential for

tourist development along the whole coast. For the local residents this holds out chiefly the hope of employment as guides or caretakers to the lodges. Without a considerable amount of financial aid and training, they are unlikely to become owners or operators of resort facilities.

The most apparent hope of these coastal communities lies in the modernization of the fishing industry. The profitable operation of larger boats from Newfoundland in deeper waters, at a time when the shore-based fishery in the same areas was a failure, points the way of the future. This modernization would require substantial investment by the provincial and/or federal government, in the form of grants and loans to acquire boats and gear. Training in basic trades as well as in fishing and fish handling methods would also be needed.

The generally low level of education among the present generation of adults makes it difficult for many of them to be accepted for the most elementary trades training or business-oriented courses. It may be necessary to find a way of making training available to those capable of absorbing it, regardless of formal education. Clearly government involvement in financing economic development and in training the settlers is needed to exploit the economic opportunities that exist on the coast.

ECONOMIC DEVELOPMENT AND COMMUNICATIONS

The coast's economic prospects bear on the communications picture in several ways. In the first place, it is evident that, whatever effort is made by governments, the coastal communities can hope for little more than economic viability. No great developments are foreseeable, apart from the possible establishment of a community to exploit a profitable mineral find or to provide a base for off-shore oil drilling operations. It is unlikely, therefore, that the market for communications on the coast will develop far beyond its present size.

Secondly, as long as the economy of the coast is geared to the shore-based fishery, and government assistance is limited to minimal improvement of facilities in individual communities, the basic pattern will continue, with countless small communities that cannot be economically serviced with communications the rest of Canada takes for granted. The Hebron and Nutak resettlements failed chiefly because alternative employment was not provided in the new locations. The transplanted settlers were unable to exploit their traditional means of livelihood without, in effect, returning to their old locations in the summer. An effective

program for modernizing the fishing industry, as well as selective development of major alternatives, would provide a natural impetus to consolidate the settlements over time. This in turn would make it less difficult and expensive to provide them with communications.

Thirdly, the coast as a whole needs a substantial investment of effort and money by government(s) to make possible the efficient exploitation of its potential. This requires a shift away from the present welfare and paternalist approach. Involvement of the Department of Regional Economic Expansion in a coordinated program of development for coastal Labrador might be one way of handling this. If so, communications could rightly be considered a necessary part of the infrastructure, given the peculiarly intimate role it plays in the economic and social life of the coast.

SOCIAL CHARACTERISTICS OF THE COASTAL POPULATION

The social climate of the Labrador coast has been well depicted by the Jackson Report of 1971.

> "The term 'Labradorians' does not simply mean the current residents of the territory. Labradorians themselves guard the term jealously and, with rare exceptions, apply it only to those born and raised in Labrador. Up to this last generation, there were few other contenders. Until the establishment of the Goose air base and, later still, the huge mining and hydro projects in the west, only the coastal fringes of the territory were settled, and its residents were almost exclusively fishermen, trappers and hunters. Many early Labrador settlers came directly from Britain, and had no ties at all with Newfoundland. Theirs was a harsh but rewarding life, and white settlers shared with Indians and Eskimos an intimate dependence on the land and sea. (They proudly share, too, the term 'native' Labradorian, and will correct a visitor who applies it only to the Indians and Eskimos.) The stern environment imposed similar lifestyles on widely scattered settlements. From Henley Harbour to North West River to Saglek Bay, life depended on a harvest of fish, fur and wild meat. This, and the common predicament of dealing with merchants and schooner fishermen from outside, fostered a regional identity which persists to this day. And now, as Labradorians see outsiders occupying and exploiting their land, this sense of identity is becoming still more intense. Thus the term 'Labradorian' means one born there, one who has earned the title through his

own or his ancestors' privation, and through his fond commitment to the land.

"It would be unfair, however, to imply that only native-born Labradorians feel a commitment to the territory and a stake in its future. Most of the non-Labradorians in Labrador are workers in the mining, power and pulpwood projects, men who may have come up for a bankroll and expect to leave when they have it, but there is also an active and influential minority in business, teaching, church or government work who are drawn to life on the uncluttered fringe of modern society. These people plan to stay in Labrador and participate in its development. Generally, they are Newfoundlanders. They have begun to share the Labradorian's feeling of a personal stake in the territory and, with it, his frustration with the policies and outlook of the provincial administration.

"For generations, the ties of Labradorian to Newfoundland were largely theoretical. Even today, their status as citizens of the province is a matter more of historical accident than of common identity or the logic of geography. Newfoundland, to Labradorians, was the home of hordes of schooner fishermen (their numbers reached a peak of 17,000 in 1907) who descended on the Labrador cod fishery every summer and at times aroused a lingering bitterness by aggressive tactics on the prime fishing grounds. The antagonism may have sprung from differing traditions. Unwritten laws of conduct were common in Labrador, a response to the demanding environment that all had to face on a roughly equal footing. A man's trapping territory was his by tradition, and a neighbour would never violate it. The same was true of the prime "berths" for setting cod traps. Newfoundland fishermen, however, recognized no such rule and frequently pre-empted berths which Labradorians had inherited from their fathers. The schooner fishermen, moreover, generally had far more gear, and could exploit the cod run more efficiently.

"Until Newfoundland joined Canada in 1949, and gained access to the national treasury, it was not government that provided most of the few social services in Labrador but medical and religious missions. Two exceptions were the Newfoundland Constabulary and later the Rangers, police forces that the RCMP succeeded when Newfoundland joined Canada; and the 'welfare stores' that Newfoundland

ran to replace trading posts the Hudson's Bay Company had abandoned on the northern Labrador coast in 1941 and 1942. Today, however, though Confederation brought significant rewards in social benefits, Labradorians still feel ham-strung in their dealings with the provincial government. Moreover, they have few meaningful ties to the nation they so anxiously joined.

"Labradorians make this vividly clear to visitors in their use of the words 'mainland' and 'Canada'. Like Newfoundlanders, they call Canadians from the other provinces 'mainlanders', though they live on the mainland themselves. Yet, in speaking of outsiders, they distinguish between 'Canadians' and 'Newfoundlanders'. In many respects, they consider themselves neither. In Happy Valley, we asked an old trapper when he'd caught the huge black wolf whose pelt adorned the wall. 'Oh, I didn't get that one, sir,' he said, 'That's from over in Canada'.

"These usages are doubtless a carry over from the days before Confederation and they're slightly more common in the speech of older Labradorians, but the younger folk share them too. They reflect not only an old habit but a current reality: most native-born Labradorians, however inadequate their ties to Canada, emphatically do not consider themselves Newfoundlanders. Thoughts of separation are common. People rarely voice in public the idea of becoming a 'Northeast Territory', or an eleventh province, or even joining Quebec, but such prospects are a prominent theme of earnest 'kitchen talk'." (2)

Three characteristics emerge from the above and similar descriptions of the coastal population. The first is the feeling of community of interest and identity, despite the differences among individual settlements and the shift in the white/Eskimo ratio from south to north. The second is the comparatively easy mixing of people of white and Eskimo origin.

> "In the communities of Southern Labrador between West Bay and Henley Harbour there are approximately 3,200 people all of British descent, although there are traces of Eskimo and Indian blood in most of these communities. The people, nevertheless, identify themselves as a white, English speaking population and refer to themselves simply as Labradorians. In Newfoundland these people are called "livers". In Northern Labrador between Makkovik and Nain there are approximately 1,500 people of whom two-thirds are Eskimo and one-third white settlers of British and Norwegian descent. These settlers are bilingual and speak Eskimo as a second language. Some of them have married into Eskimo families. They are identified locally as settlers or Eskimos more according to social consideration than biological circumstances. At Davis Inlet there is a population of approximately 175 Nascapi Indians." (3)

This is a situation worth promoting. In this small and comparatively isolated area there is perhaps an opportunity to develop the interface between the two cultures in a way that will help make such confrontation easier and richer in other parts of Canada.

The third characteristic is an extension of the second. The Labradorians, both white and Eskimo, are to a considerable extent in the position of an unsophisticated culture meeting "the outside". Economic development and the development of communications to date are bringing this coastal community as a whole into more and more frequent contact with a world in many ways fundamentally different from their own. To help them understand this world and their own role in it, better electronic communications are important. This is an example of the situation the Green Paper on communications envisages when it says:

"To-day, communications systems are developing with new levels of diversity and sophistication, which tend to reinforce the economies of a north/south axis. At the same time, more and more Canadians are discovering and giving expression to their relationship to each other and to the diverse cultures and regions of the country. There is a gathering urgency to state and follow a communications policy which is national in scope, which will have the support of all Canadians, and which will permit that shared knowledge of Canada and of the world which is not a luxury but a necessity. It is an established philosophy in Canada that the unity of the country can only be based on a recognition of diversity. The Canadian writer, Northrop Frye, has said: ". . . real unity tolerates dissent and rejoices in variety of outlook and tradition . . .". Thus Canada has two official languages and the Government has worked effectively to strengthen the cultural heritage of English-speaking and French-speaking Canadians, and to encourage contributions by the other cultures that help to form the Canadian identity." (4)

Needless to say, this is a two-way learning process. As the Jackson Report says, speaking of Labrador as a whole:

"All of Labrador faces the problem of being little valued or even thought of by most Canadians. Southern Canadians have recently shown a growing interest in the problems and promise of the Northwest Territories and the Yukon. Through their federal government, they have a stake in these territories. But we hear little about the northern portions of our mainland provinces, and still less about the northern territory of our newest, poorest, and most eccentric partner in Confederation." (5)

CHAPTER II - References

(1) Canada Year Book, 1972, Page 48

(2) Jackson, Laura and Jackson, Lawrence; Labrador, a report prepared for Planning Services, Information Canada, Ottawa; May-September, 1971; pp. 12-14

(3) Communication Needs on the East Coast of Labrador, a report prepared by the Extension Service, Memorial University of Newfoundland, for the Department of Communications and the Bell Telephone Company of Canada; Labrador, 1970; page 7

(4) Proposals for a Communications Policy for Canada, Communications Canada; Ottawa, March, 1973; Page 3

(5) Jackson; op, cit,; Page 64

III PRESENT STATE OF TELECOMMUNICATIONS IN LABRADOR

The main telecommunication facilities in Labrador are owned and operated by Newfoundland Telephone, U.S. Air Force, CBC, the Churchill Falls Corporation, Quebec North Shore & Labrador Corporation and Telesat. Other facilities are owned and operated by the Ministry of Transport, National Defence, the RCMP, the Provincial Government and its related agencies, and several other organizations.

NEWFOUNDLAND TELEPHONE

On January 1, 1974, Bell Canada's Labrador facilities were purchased by Newfoundland Telephone Company. Toll facilities provided by this carrier in Labrador are mostly HF, VHF, UHF, and troposcatter systems.

HF: The different communities served by HF radio telephone are indicated on Attachment 3 and also Table I. The number of channels to each community or customer are indicated below:

Users	Channels
Audeo Lake*	11-12-13-14 (4)
Air Operated Equip. Ltd.*	12-13 (2)
Batteau (Summer)	11-12-13 (3)
Black Tickle	11-12-14 (3)
British Nfld. Corp. Ltd.*	11-12 (2)
Davis Inlet	11-12-13-14 (4)
Eagle Lake*	11-12-13 (3)
Eagle River*	14 (1)
Frenchman's Isl. (Summer)	11-12 (2)
Goose Outfitters*	11-12-13 (3)
Indian Tickle	11-12-14 (3)
Little Minipi Lake*	11-12-13 (3)
Makkovik	11-12-13 (3)
Nain	11-12-13-14 (4)
Paradise Point	11-12 (2)
Packs Harbour (Summer)	11-12-13 (3)
Porcupine Harbour	11-12 (2)

Users	Channels
Postville	11-12-13 (3)
Rigolet	11-12-13 (3)
Triangle (Summer)	11-12-14 (3)
Smokey (Summer)	11-12-13 (3)
Spotted Island (Summer)	11-12-13 (3)
Tub Island (Summer)	11-12-14 (3)

* HF set not owned by N.T. Co.

VHF/UHF:

The different communities served by the various VHF/UHF facilities owned and operated by N.T. Co. are identified on Attachment 4 and also Table I.

The circuit capacity under present configurations of the different VHF/UHF cross-sections are identified below:

Cross-Section	Number of Circuits
Mary's Harbour - Fishing Ships Harbour	1
Mary's Harbour - William's Harbour	1
Mary's Harbour - Pinsent Arm	1
Mary's Harbour - Snug Harbour	1
Mary's Harbour - Charlottetown	1
Mary's Harbour - George's Cove	1
Mary's Harbour - Square Island	1
Mary's Harbour - Port Hope Simpson	2
Mary's Harbour - Fox Harbour	2
Mary's Harbour - Battle Harbour	1
Mary's Harbour - Cape Charles	1
Mary's Harbour - Pitts Harbour	1
Mary's Harbour - Henley's Harbour	1
Mary's Harbour - Red Bay	8
Red Bay - L'Anse-au-Loup	3
West St. Modeste - L'Anse-au-Loup	4

Forteau - L'Anse-au-Loup	4
Corner Brook - L'Anse-au-Loup	3
Forteau - L'Anse-eau-Claire	3
Blanc Sablon - L'Anse-eau-Claire	1
Goose Bay - North West River	3
Goose Bay - Mud Lake	1
Grabbro Lake - Atikonik Hill	6
Atikonik Hill - Sona Lake	24
Emeril Lake - Wabush	12
Emeril Lake - Wabush	48
Twin Falls - Chruchill Falls	18
Sangirt Lobstick - Atikonik Hill	12

Troposcatter

Communities served by the N.T. Co. Troposcatter systems are identified on Attachment 5 and Table I. N. T. Co. owns and operates two systems in Labrador. These are:

a) Sept Iles - Goose Bay

The Sept Iles - Goose Bay tropospheric scatter radio relay system provides commercial and military communications service between Sept Iles (Quebec) and Goose Bay (Labrador). It is owned and operated by N.T. Co. and Quebec Telephone.

The system is about 450 miles long with intermediate repeaters at Cantiche, Emeril and Sona Lake. A UHF spur extends from Emeril to Wabush, while Sona Lake is tied via microwave with Churchill Falls.

The system operates in the 900 MHZ frequency band and has varying capacities for two-way telephone circuits on various sections of the route (192 circuits between Sept Iles and Emeril, 132 circuits between Emeril and Sona Lake and 120 circuits between Sona Lake and Goose Bay). The system is operating under almost fully loaded conditions.

Interconnection with the southern communications networks is available at the Sept Iles terminal while the major east-west connection for military traffic is available at Goose Bay via the Polevault troposcatter radio system.

VHF, UHF and HF links emanating from Goose Bay and serving areas of eastern Labrador have access facilities to this troposcatter radio system.

b) Polevault System

The Polevault tropospheric scatter system runs along the eastern coast of Canada from St. Anthony (Newfoundland) to Cape Dyer (NWT). Polevault (South) consists of a station at St. Anthony owned by CNT and stations at Goose Bay and Cartwright owned by N.T. Co. Polevault (North) is owned and operated by the U.S.A.F. and operates from Goose Bay to Cape Dyer via intermediate repeaters at Hopedale, Sagleg, Resolution Island, and Res X-1. Negotiations are underway, under the auspices of DOC and the Canadian Commercial Corp. between Bell Canada (representing Newfoundland Tel.) and the U.S.A.F. to determine the feasibility of transferring the ownership of the Polevault (North) to N.T. Co.

There is a tropospheric scatter spur link to Frobisher Bay from Resolution Island. The Frobisher Bay station is owned by DOC and operated by CNT.

Both the Polevault systems operate in the 565-735 MHZ frequency band. The overall system capacity for two-way telephone circuits varies over sections of the route (47 circuits between St. Anthony and Goose Bay, 72 circuits between Hopedale and Resolution Island and 24 circuits between Resolution Island and Frobisher Bay). The Polevault (North) system is operating below its fully loaded capacity, while the Polevault (South) is operating under almost fully loaded conditions.

Interconnection to the southern communications networks are made at St. Anthony and Goose Bay while access to the DEWline system is available through a 132 channel troposcatter radio link between Resolution Island and Cape Dyer.

N.T. Co. and CNT are in the process of modernizing the existing equipment on the Pole-vault (South) system. This will improve the capacity of the system, allowing it to carry a total of 132 circuits.

QUEBEC NORTH SHORE & LABRADOR RAILWAY CO.

The Quebec North Shore and Labrador Railway microwave system extends between Sept Iles and Schefferville with a spur to Labrador City. The system operates in the 6GHZ band and carries an RF message channel with a capacity of 600 voice channels. In addition, a TV channel provides service to Labrador City and Schefferville.

TELESAT

Telesat owns and operates a single earth station in Labrador. The earth station is in the Goose Bay/Happy Valley area and is used to feed CBC TV programs to these two communities only.

CBC

An application by CBC to build a microwave system between Sawbill and Churchill Falls has been approved by DOC. The purpose of the system is to feed CBC programs to Churchill Falls. A parallel CBC UHF system will carry data channels for control purposes.

MINISTRY OF TRANSPORT

Prior to the extension of Bell Canada's services many communities on the east coast of Labrador were supplied with DOT lighthouse radio telephones. These were 20 watt HF radio telephones. The communities involved were usually allocated two sets each. When Bell Canada extended their services to these communities, attempts were made by DOT to remove these sets. However, because of the numerous complaints received by the Minister of Transport these sets were left in the hands of the people operating them.

The status of many of these sets is unknown since the persons operating them move in the summer with the sets to seasonal fishing settlements. Some ad hoc maintenance is

provided to some of the sets by MOT at Goose Bay. However, most of these sets are beyond their useful life.

Some of the persons operating these sets are paid by MOT on the basis of $35/month for operating them and $35/month for the space the sets occupy in their residence. Others are paid with supplies of stove oil and gas. Still others were not paid at all.

The original and principal purpose of these sets was to provide the community dwellers with emergency communications and access to telegraph service. Telegraph messages from coastal residents were sent to DOT installations at White Point and Cartwright, which in turn forwarded these messages to CNT in Goose Bay. At present, most of these sets are used in the summer fishing settlements to provide communications and as a "gossip line".

The last of these remaining sets that we are aware of are located at Black Tickle, Mary's Harbour, Port Hope Simpson, Frenchman's Island, Fishing Ships Harbour and Henley Harbour. The communities of Georges Cove and Cape Charles are provided with similar sets by CNT.

BROADCASTING SERVICES

The different broadcasting services offered in Labrador are tabulated below. The bracketed numbers ( ) indicate the locations of the different TV stations as shown on Attachment 6, which indicates their Contour B coverage in Labrador.

TV Stations (Including Rebroadcasting Stations)

Call Sign	Address	Frequency MHZ	Operating Power Watts	Remarks
(1) CBNAT-4 Channel 12	St. Anthony	205.25 video	5	Owned and Operated by CBC (English)
(2) In Construction	Fox Harbour	175.25 video 179.75 audio	400 video 40 audio	Owned and Operated by CBC (English)

Call Sign	Address	Frequency MHZ	Operating Power Watts	Remarks
(3)				
CFLA Channel 8	Goose Bay	181.25 video 185.75 audio	870 video 435 audio	Owned and Operated by CBC (English)
(4)				
CBTC Channel 9	Churchill Falls	187.25 video 191.75 audio	5	Owned and Operated by CBC (English)
(4)				
CBTC-2 Channel 13	Churchill Falls	211.25 video 215.75 audio	5	Owned and Operated by CBC (English)
(5)				
CJCL Channel 13	Labrador City	211.25 video 215.75 audio	590 video 295 audio	Owned and Operated by CBC (English)
(6)				
CFKL Channel 11	Scheffer-** ville	199.25 video 203.75 audio	426 video 213 audio	Owned and Operated by CBC (English)

AM RADIO STATIONS

Call Sign	Address	Frequency MHZ	Operating Power Watts	Remarks
CFLW	Wabush	1400	250	Private station (English)*
CFGB	Happy Valley	1340	1000	Owned by CBC (English)

LOW POWER RELAY TRANSMITTERS

(Owned by CBC)

Call Sign	Address	Frequency (KHZ)	Operating Power (Watts)
CBDP	Labrador City	1240	40
CBDQ	Wabush	1400	40
CBDZ	Churchill Falls	740	40
CBNK	Cartwright	570	40
CBQA	Churchill Falls	610	40
CBNN	Hopedale	1490	40

* Eventually will be owned by CBC.

** Located in the Province of Quebec but its coverage extends in Labrador.

IV EVALUATION OF THE ADEQUACY OF PRESENT COMMUNICATION SERVICES IN LABRADOR

Table I identifies the communities in Labrador which are served by N.T. Co. or have a telecommunication user established within the community. In addition, communities with a population of 30 or more inhabitants are listed on this table.

Many of the communities identified on Table I are seasonal ones. This made it quite difficult to compile an accurate inventory of the population in Labrador. The data used in the preparation of the above-mentioned table were derived from publications by Statistics Canada and the Province of Newfoundland and Labrador. (1)

DISTRIBUTION OF COMMUNICATIONS SERVICES

The main telecommunications facilities in Labrador have been built for operational purposes. The Polevault System was built by U.S.A.F. primarily to fulfill defense operational needs. Similarly the Shefferville - Sept Iles microwave system was built by the Quebec North Shore and Labrador Railway Co. to provide needed communications pertaining to the Iron Ore Co. mining operations. In addition, this system is used to provide the necessary communications for the communities built by this company for their employees. CBC and the Churchill Falls Co. have their own systems for similar operational purposes.

The table following indicates the extent of the communication services provided by N.T. Co. in Labrador:

	Population	Percentage
Labrador Total	28,166	100%
Serviced by N.T. Co.	21,060	75%
Serviced by N.T. Co. HF toll service	1,282	4.5%
Serviced by N.T. Co. Exchange service	19,917	71%
Serviced by N.T. Co. Toll Public service	1,143	4%
Serviced by Others	5,578	19.5%
No Service	1,528	5.5%

ECONOMICS OF SERVICING LABRADOR

It should be noted that the larger communities in Labrador have been created in the last 20 to 30 years due to large commercial development or defense related projects. These communities are mostly located inland, and have communications services comparable to those provided in Southern Canada. As stated above, the organizations which have major establishments in Labrador are the U.S.A.F., DND, MOT, Iron Ore Co., and Churchill Falls Corporation. These organizations have built their own communications facilities in order to meet their operational communication needs and also to service communities where their workers live.

However, on the Labrador coast, where the major occupation is coastal fishing, and has been as long as could be remembered, communications services have been provided mostly by Bell Canada. One of the features of coastal fishing in Labrador is the movement of a large number of people to summer fishing camps. This has compounded the problem of providing adequate telecommunications services on the coast of Labrador, which is formed of thinly populated and isolated settlements. In addition, most of these settlements have no adequate source of electrical power, which is a necessary element for the provision of high grade communications service.

As mentioned previously, the provincial government had in the past instituted a resettlement program in order to concentrate the coastal population in larger and fewer communities, where an adequate infrastructure could be provided for them economically. However, for many reasons the program has been declining.

Bell Canada's Position

Provision of telephone service in the northern regions of the country, including Labrador, is governed by the economic realities of the cost of such a service. For example, Bell Canada had established a set of criteria for the provision of telephone service to communities in the area. These criteria were:

1) Radio telephone service will be provided if permanent resident population exceeds 50 persons or if the seasonal resident population exceeds 100 persons.

2) Exchange service will be provided if a minimum of 50 subscribers take year round service.

3) Availability of electrical power in the community.

It should be noted, however, that Bell Canada has in the past provided service to communities which did not meet the criteria outlined above. According to Bell Canada, these creteria reflect the limited financial resources available within the company.

No figures are available to indicate the profitability of Bell Canada's operation in Labrador. However, it is safe to state that their operation on the coast of Labrador was a losing proposition, as indicated below:

	1969	1972
-Bell Canada revenues derived from Labrador	---	$ 2,002,000*
-Total assets of Bell Canada in Labrador	$14,600,000**	$24,000,000+
-Bell Canada revenues derived from the coast of Labrador	$ 112,000**	$ 172,000*
-Expenses incurred by Bell Canada on the coast of Labrador	$ 417,000**	$ 685,000+
-Losses incurred by Bell Canada in providing service to the Labrador Coast	$ 305,000**	$ 513,000+

* Provided by Bell Canada
** Telecommission study 8(c) Vol. 3 "Northern Communications Requirements". (2)
\+ Estimated

The following table provides a brief comparison of the various carriers serving Newfoundland and Labrador in 1972.

	Area Served	Telephones	Assets ($000)	Net Profit (Loss) ($000)
Labrador Telephone Co.	Labrador City	3,600	160	61
CNT	Island of Nfld.	35,300	40,320	(55)
Newfoundland Telephone	Island of Nfld.	109,800	71,150	3,634
Bell Canada	Labrador	8,300	24,000	?

HF-RT (HIGH FREQUENCY - RADIO TELEPHONE)

Fifteen communities on the Labrador coast are serviced by N. T. Co.'s HF radio toll network. The HF radio provides a grade of service which is substantially lower than the acceptable norm for Southern Canada. The reliability of HF services is only 60% to 80% due to to its technical characteristics which are outlined below:

a) Outages occur frequently because of changing ionospheric conditions and frequency interference from other users.

b) This mode of communications is usually limited to one-way conversation at a time with the switching each way performed by the operator.

c) The HF radio telephone provides no privacy since all receivers on the HF network are tuned to the same frequency.

d) The HF sets are located in isolated settlements which are not easily accessible. This makes it difficult to provide the proper maintenance for these sets.

e) The HF radio is relatively cheap but is usually limited to the transmission of very few circuits. In addition, not all circuits could be used at any one time due to atmospheric conditions and the limited number of operators in Goose Bay to respond to calls. In fact, most of the time only a single operator would respond to calls originating from a given community. Consequently, callers have to wait their turn for a long time before they can place their calls. Also, because of the limited availability of circuits on the HF network, Bell Canada had introduced a calling schedule for communities served by the network. This schedule for the summer of 1973 is outlined below:

Community	Stand-By Hours
Audeo Lake	2:00 p.m. - 12:00 a.m.
Air Operated Equip. Ltd.	
Batteau (Summer)	9:00 a.m. - 12:00 p.m. 2:00 p.m. - 4:00 p.m. 7:00 p.m. - 10:00 p.m.

Community	Stand-By Hours
Black Tickle	10:00 a.m. - 12:00 p.m. 2:00 p.m. - 5:00 p.m. 7:00 p.m. - 10:00 p.m.
British Nfld. Corp. Ltd.	
Davis Inlet	9:00 a.m. - 12:00 a.m. 1:00 p.m. - 2:00 p.m. 7:00 p.m. - 8:00 p.m.
Eagle Lake	
Eagle River	9:00 a.m. - 9:30 a.m.
Frenchman's Island (Summer)	9:00 a.m. - 10:00 p.m.
Goose Bay Outfitters	
Indian Tickle	8:00 a.m. - 12:00 p.m. 5:00 p.m. - 9:00 p.m.
Little Minipi Lake	
Makkovik	10:00 a.m. - 12:00 p.m. 1:00 p.m. - 3:00 p.m. 6:00 p.m. - 8:00 p.m.
Nain (no time limitation for emergencies)	10:00 a.m. - 12:00 p.m. 2:00 p.m. - 4:00 p.m. 6:00 p.m. - 8:00 p.m.
Paradise River	10:00 a.m. - 11:30 a.m. 2:30 p.m. - 3:30 p.m.
Pack's Harbour (Summer)	10:00 a.m. - 12:00 p.m. 2:00 p.m. - 3:30 p.m. 6:30 p.m. - 8:30 p.m.
Porcupine Harbour	
Postville	9:30 a.m. - 11:00 p.m. 1:00 p.m. - 2:30 p.m. 7:00 p.m. - 8:00 p.m.
Sunday	12:30 p.m. - 2:30 p.m. 4:30 p.m. - 6:30 p.m.
Rigolet	10:00 a.m. - 12:00 p.m. 1:00 p.m. - 2:00 p.m. 5:30 p.m. - 7:30 p.m.
Triangle (Summer)	11:00 a.m. - 12:30 p.m. 2:00 p.m. - 4:00 p.m.
Spotted Island (Summer)	
Tub Harbour (Summer)	

COST OF LOCAL SERVICE

All communities served by N. T. Co. exchange service in Labrador are identified on Table I. The residential telephone monthly rates for all these communities except for Goose Bay and Wabush are the same. A comparative table identifying these rates for Labrador and other parts of Canada is shown below:

Geographical Location	Single-Party Rate	Two-Party Rate	Multi-Party Rate
- All exchange serviced communities in Labrador except for Goose Bay and Wabush	$4.00	$3.20	$3.05
- Goose Bay and Wabush	$4.55	$3.55	$3.35
- N.T. Co. Island Territory (Communities with 0-1,000 telephones)	$5.00	$4.50	$2.25
- N.T. Co Island Territory (Communities with 1,001-5,000 telephones)	$5.30	$4.80	$2.40
- New Brunswick (Communities with 0- 500 telephones)	$4.20	$3.45	$3.25
- New Brunswick (Communities with 501-1,250 telephones)	$4.40	$3.65	$3.45
- Nova Scotia (lowest rate)	$4.60	$4.10	$3.75

PUBLIC MESSAGE SERVICE IN LABRADOR

The Public Message service, more commonly known as telegraph service, is provided by CP/CN Telecommunications. This carrier maintains only two offices in Labrador, at Goose Bay and Churchill Falls. Living conditions on the coast of Labrador create a widespread need for this mode of communications for the following reasons:

a) Most inhabitants of the coast consider the mail service unreliable.

b) Although telegraph services provide rapid transmission of information comparable to the long distance telephone service, the former costs the user much less.

c) Most inhabitants of the coast have not lived in a highly automated environment. Finding an area code and the required telephone number, dialing it and asking for the proper person to talk with and then explaining the purpose of the call is considered quite a challenge for people that have not been exposed to the environment of southern Canada.

The tariff structure for the telegraph service on the coast of Labrador is quite complex because of the involvement of two additional organizations in the routing of messages. These are the federal Ministry of Transport, and the Labrador Services Division of the provincial Department of Social Services and Rehabilitation.

Telegram Messages

The Ministry of Transport provided in the past the only and vital communications link for coastal communities in Labrador. The involvement by the Ministry in routing telegram messages has declined drastically over the last four or five years. At one time a peak of two thousand messages per month in and out of the area were handled, including not only domestic traffic but also other services, the principal one being ship-to-shore traffic.

A few years ago the Ministry officially declared that it would withdraw from domestic telegraph service, because of the introduction of telephone service by Bell Canada in many of the communities involved. Accordingly, telegraph services for the coast were to be handled by calling directly CNT in Goose Bay and incurring long distance charges to relay or receive telegram messages. However, local pressure kept the Ministry in the telegraph business in some of the coastal communities, because the rates charged by MOT were low compared with the charges that would have been normally incurred by dealing with CP/CN Telecommunications directly. In effect, MOT was and is still to some degree subsidizing the cost of telegraph services on the coast of Labrador. A description of the routing of telegrams to and from the coast and the charges incurred by the users is shown below.

At present, communities equiped with MOT radio sets do not in general use them to send telegrams unless the public telephone network is inoperative.

a) Telegraph service for the South Coast of Labrador:

- Communities in which MOT still operates a public telegraph service include: Black Tickle, Port Hope Simpson, Cape St. Charles, Henley Harbour, Mary's Harbour, Snug Harbour, Lodge Bay, Frenchman's Island, Square Island.

- The sender can call collect to MOT in Goose Bay on the public telephone network (toll charges are paid by MOT). For this, MOT charges the user $.40 for the first 15 words, $.02 for each of the following 10 words and $.01 for each subsequent word (40-2-1).

- If the telegram is destined to locations beyond Goose Bay, then text is given to CNT, which transmits the telegram to its destination for an additional charge according to the tariffs shown on page 10.

- In communities not served by MOT, the sender is required to cal long distance to CNT in Goose Bay at his own expense and be charged in addition the telegram transmission tariff indicated on page 10.

- For a telegram forwarded from anywhere to coastal communities, the sender is required to pay, in addition to the telegram transmission tariff, telephone toll charges from Goose Bay to the receiving location in order to complete the delivery of the telegram. These toll charges are indicated below.

Community	Toll Charges
Batteau	$1.20
Battle Harbour*	$1.30
Black Tickle	$1.00
Cape St. Charles	$1.30
Cartwright*	$0.90
Charlottetown	$1.20
Fishing Ships Harbour	$1.10
Fox Harbour	$1.10
Frenchman's Island	$1.20
Georges Cove	$1.20
Henley Harbour (Summer)	$1.30
Indian Tickle	$1.20
Lodge Bay	$1.30
Mary's Harbour	$1.10
Pack's Harbour	$1.10
Paradise Point	$1.00
Pinsent Arm	$1.00
Pitts Harbour	$1.30

Communities	Toll Charges
Porcupine Harbour	$1.20
Port Hope Simpson	$1.00
Smokey	$1.10
Snug Harbour	$1.20
Spotted Island	$1.20
Square Island	$1.20
Triangle	$1.20
Tub Harbour	$1.20
Williams Harbour	$1.20

* A less expensive delivery alternative is available through MOT facilities at these locations.

b) Telegraph Service for the North Coast of Labrador:

- On the North Coast of Labrador the LSD (Labrador Services Division) HF radio system is used in the routing of telegrams. All out going telegrams from Nain, Davis Inlet, Makkovik and Postville are collected at Hopedale, which is the only community on the North Coast with high grade toll facilities (Polevault North, Troposcatter system). The LSD Manager in Hopedale relays these messages to CNT in Goose Bay via the public telephone network. The user is charged the 40-2-1 rate. This rate is sometimes not enough to cover the combined cost of the long distance telephone call and the CNT charges. Accordingly, MOT subsidizes this service, making it possible for CNT and N.T. Co. to have their bills paid. Any telegram message for destination beyond Goose Bay costs the sender the tariff indicated on page 10.

- Telegrams addressed to communities on the North Coast are forwarded to Hopedale via the public telephone network. CNT charges an additional $.90 per telegram to cover the cost of the long distance call from Goose Bay to Hopedale. At Hopedale, the LSD HF network is used to distribute these telegrams to other communities on the North Coast.

The public message service under the present structure discriminates against users living in communities in which CN/CP Telecommunications does not have an office. Users in these communities have to incur the cost of long distance charges to and from the nearest CN/CP office. As stated above, CNT has only two offices in Labrador, neither of them on the coast.

CANADIAN NATIONAL TELEGRAM TRANSMISSION TARIFF, GOOSE BAY, LABRADOR

TO OR FROM:

	Yukon	N.W.T.	B.C.	Alta.	Sask.	Man.	Ont.	Que.	N.B.	P.E.I.	N.S.	Nfld.
Yukon	1											
N.W.T.	2	1										
B.C.	2	2	1									
Alta.	2	2	2	1								
Sask.	3	2	2	1	1							
Man.	3	3	3	2	1	1						
Ont.	3	3	3	3	3	2	1					
Que.	3	3	3	3	3	3	1	1				
N.B.	3	3	3	3	3	3	2	1	1			
P.E.I.	3	3	3	3	3	3	2	1	1	1		
N.S.	3	3	3	3	3	3	2	1	1	1	1	
Nfld.	3	3	3	3	3	3	3	2	2	2	2	1

TABLE B:

	Full Rate		Night Letter	
	15 words or less	Each Addtl. Word	50 words or less	Each Addtl. 25 words or less
Within Zone 1	$1.40	$0.08	$1.35	$0.25
From Zone 1 to Zone 2	2.15	0.10	1.85	0.25
From Zone 1 to Zone 3	3.00	0.12	2.65	0.25

CHAPTER IV - References

(1) Dyk, A.P. Community Inventory of Coastal Labrador; St. John's; Department of Labrador Affairs; 1969 (January, 1973 reprint, revised to December 31, 1971).

(2) Department of Communications; Northern Communications Study, Vol. 3: "Northern Communications Requirements", Telecommission Study 8(c); Ottawa; October, 1970; Annex III, page 3.

V A MODEL FOR AN IMPROVEMENT PLAN

This portion of the study proposes a model for an improvement program of telecommunications services on the Labrador coast. This model has been prepared with consultation with Bell Canada regarding the cost of instituting such an improvement program. The proposals are conceptual models and are developed for further discussion. They do not necessarily represent the position of the organizations involved nor do they imply any future commitments on the part of any of those organizations.

The objective of this portion of the study is to determine how telecommunication services on the coast of Labrador, where they are most wanting, could be improved, and to prepare cost estimates for the alternatives considered. It should be noted that the UHF satellite concept was not considered in this study because of its uncertain status at this time.

GUIDELINES FOR POTENTIAL IMPROVEMENTS

The following arbitrary guidelines will be used to establish the basis for the model under consideration.

1) Permanent communities to have an exchange service with high grade toll facilities (no HF). This would entail the following improvement projects:

Community	Present Type of Service	Present Facilities	Proposed Improvements
Battle Harbour	Toll Public	VHF	Exchange service
Black Tickle	Exchange	HF	VHF or M/W facilities
Rigolet	Toll Public	HF	Exchange service and VHF or M/W facilities
Makkovik	Exchange	HF	VHF or M/W facilities
Postville	Exchange	HF	VHF or M/W facilities
Davis Inlet	Exchange	HF	VHF or M/W facilities
Nain	Exchange	HF	VHF or M/W facilities

2) Seasonal Communities with a population of 50 persons or more to have at least "Toll Public" services with high grade toll facilities (no HF). This would entail the following improvement projects:

Community	Present Type of Service	Present Facilities	Proposed Improvements
Indian Cove	none	none	Toll Public service and VHF or M/W facilities
St. Francis Harbour Bight	none	none	Toll Public service and VHF or M/W facilities
Sandy Hook	none	none	Toll Public service and VHF or M/W facilities
Venison Tickle	none	none	Toll Public service VHF or M/W facilities
Seal Island	none	none	Toll Public service and VHF or M/W facilities
Batteau	Toll Public	HF	VHF or M/W facilities
Spotted Island	Toll Public	HF	VHF or M/W facilities
Indian Tickle	Toll Public	HF	VHF or M/W facilities
Paradise River	Toll Public	HF	VHF or M/W facilities
Grady Island	none	none	Toll Public service and VHF or M/W facilities
Packs Harbour	Toll Public	HF	VHF or M/W facilities
Matthew's Cove	none	none	Toll Public service and VHF or M/W facilities

The communities of Indian Harbour, Young's Harbour and Black Island indicated in Table I and which would normally qualify for improvement under this guideline are not considered here. The reason is that some of the population data pertaining to them are not available.

3) Seasonal communities with a population of 30 or more persons to have at least a Toll Public service. This would entail the following improvement projects:

Community	Present Type of Service	Present Facilities	Proposed Improvements
Barge Bay	none	none	Toll Public service (HF)
Camp Island	none	none	Toll Public service (HF)
Trap Cove	none	none	Toll Public service (HF)
Murray's Harbour	none	none	Toll Public service (HF)
Rickson's Cove	none	none	Toll Public service (HF)
Separation Point	none	none	Toll Public service (HF)
West Bay	none	none	Toll Public service (HF)

For the reasons stated in (2) above, the communities of Occasional Harbour, Horse Harbour, Emily Harbour, Ironbound and Ailik are not considered for improvement under this guideline.

4) Permanent communities with a population of 200 persons or more, and which are not adequately covered by an existing radio station, to have local radio services. This would entail the following improvement projects:

Community	Present Broadcast Services	Proposed Improvement
Makkovik	none	Increase power of Hopedale transmitter
Nain	none	Establish a community radio station with emphasis on native programming.

5) Permanent communities with a population of 500 persons or more, and which are not adequately covered by an existing TV station, to have TV services. This would entail the following improvement projects:

Community	Present Broadcast Services	Proposed Improvement
Cartwright	LPRT	Remote TV transmitter
Nain	none	Remote TV transmitter

The high grade toll facilities referred to above presumes a duplex facility with a noise performance of at least 44.0 dBrnco over a distance of 4,000 miles and a minimum reliability of 98% - 99%.

SMALLER PERMANENT, SEASONAL AND TEMPORARY COMMUNITIES

The foregoing plans do not provide for either permanent or seasonal communities below the stated minimum size. While it may be possible to re-allocate some of the existing HF sets, as indicated above, the small number of potentially surplus sets would not go far toward meeting the total need in these smaller centers.

It is proposed that DOC should investigate the use of "trail sets" for these communities. The Northern Pilot Project* had in any case intended to explore the use of small portable sets for the use of hunting parties, so that they may keep in touch with their home communities while out on the barrens. The value of this application for morale building and safety purposes is substantial. However, sets for this application could also be used by Labrador coastal residents that move to summer fishing communities, and by the very small permanent communities. They could similarly be used, of course, by hunting and trapping parties, both of which activities are a substantial part of the life pattern of coastal Labradorians.

It is therefore proposed that DOC make the Labrador coast the major test area for its developmentof the "trail set" concept. This would provide for testing the widest variety of applications, under the most severe and varied conditions of service.

COMMUNITY RADIO

The need for a community radio station in isolated northern settlements has been identified in numerous analyses of and reports on the social aspects of communications. The Northern Communications Conference, held in Yellowknife in September of 1970, gave formal recognition to this need.

> "Radio broadcasting is very important to northern residents. Presently there are large areas, such as the District of Keewatin, without broadcast services. Each community should have a radio program service for education, information, entertainment, and social action purposes. This service might be established by low-power community operated radio stations. Programming in native languages should be encouraged. Full participation and operation by local people is recommended. Community ownership - as distinct from CBC overlap - should be investigated." (1)

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* The Northern Pilot Project Office, under its present terms of reference, will have to conclude its work in the near future. Some working arrangement could be found by which DOC regional offices could carry some of the viable projects initiated by this Office, such as the "trail set" concept.

The DOC was contemplating assisting in the establishment of a community radio station at Nain. However, if the CBC Advanced Coverage Plan is approved by Cabinet, Nain will be served by a low-powered relay transmitter. For this reason DOC will not now be involved in such an undertaking. In view of the predominantly native population in some of the communities served under the proposed advanced coverage plan the possibility of having some local programming in these communities should be investigated.

INTER-COMMUNITY RADIO

Experience with the Cominterphone network centered on Rankin Inlet, N.W.T., the HF network centered on Baker Lake, N.W.T., and with the RAVEN network of British Columbia has demonstrated an important need for an informal inter-community communications system in isolated areas. Such a network provides for mutual support and the exchange of information relative to the everyday life of communities with similar lifestyles. These "gossip lines" are particularly helpful to groups of isolated communities whose residents commonly use a native language. The need is accentuated where use of conventional facilities is expensive, as would be the case among communities on the Labrador coast (even with the improvements proposed in this report).

The MOT radios on the Labrador coast have in part filled this need in the past. They should be augmented or replaced by an extended network of sets devoted to the person-to-person exchange of community and personal news, information on fish and game movements, progress of boats and planes, etc. In part the use of such facilities will overlap with the functions of community radio.

As an alternative to the above, there is the possibility of making the entire northern part of the coast and the entire southern part of the coast into two telephone "Extended Areas of Service" (EAS). With no toll charges incurred for calling within these two areas, this would shift the financial burden onto the carrier. It would be very difficult to estimate the cost of such an undertaking since it would involve a forecast of the increase in inter-community calling traffic due to the removal of the toll charges. There is no prior experience in any similar area on which to base such a forecast.

The "gossip line" proposal is related to community radio, and for this reason the present report does not attempt the planning or costing of these communications requirements.

COST OF PROPOSED IMPROVEMENTS TO LOCAL SERVICES

According to the guidelines outlined above, exchange services will be introduced to the communities of Battle Harbour and Rigolet. The cost of such a project is indicated on Attachment 7.

PROPOSED TERRESTRIAL MICROWAVE SYSTEMS ON THE LABRADOR COAST

Attachments 8 and 9 give schematics of proposed microwave systems on the northern and southern coasts of Labrador, respectively. Relevant site details for both systems are indicated on Attachments 10 and 11.

The proposed microwave equipment should be all solid-state type with a capacity of 600 voice frequency channels per RF channel. This would give the systems under consideration the capability of carrying TV channels. In addition, the RF microwave repeater concept should be considered as a solution for reducing the site development costs. In many locations, there will be a requirement to provide toll facilities by connecting a given community with a repeater on the proposed microwave system. At these locations, consideration should be given to utilizing the sub-baseband or drop-insert channels complemented by a low capacity multiplex terminal.

The proposed microwave systems propagate over large bodies of water except for two hops (Makkovik RR - Makkovik C.O. and George's Cove - Fox Harbour). This will tend to degrade the propagation reliability of these systems. However, the installation of space diversity antennas except for the two hops mentioned above will compensate for the anticipated degradation in reliability.

PROPOSED VHF SYSTEMS IN LABRADOR

As mentioned above, some of the microwave repeaters on the proposed systems would be used to interconnect with VHF systems providing toll facilities to different communities on the Labrador coast. The proposed VHF network configuration is shown on Attachment 12.

Mary's Harbour is the hub of N.T. Co's VHF/UHF network on the southern coast of Labrador. Fox Harbour, being the southern terminal of the proposed microwave system on the coast, should have a viable microwave link to Mary's Harbour with a larger circuit capacity than the existing UHF link.

PROPOSED HF SYSTEM IN LABRADOR

The proposed HF network configuration in Labrador is indicated on Attachment 13. It should be noted that under this configuration service will be extended to seven communities on the coast for the first time. Under the proposed improvement program, eleven larger communities on the coast, now serviced by the present HF network, will be using an improved toll facility. This will in effect improve the availability of toll circuits on the N.T. Co. HF network and reduce the waiting time to place a long distance call, since the number of callers using the network will be reduced.

COST OF THE PROPOSED IMPROVEMENT PROGRAM

The cost of the improvement program, as per the configuration discussed above, is indicated below. These costs are based on averages derived from historical data pertaining to the cost of establishing similar systems to the ones prescribed in this study.

However, the cost of establishing systems on the Labrador coast differs from the national average. Consequently, an attempt was made to incorporate in these cost figures estimates of additional charges that will be incurred due to the geographical and climatic conditions on the coast of Labrador.

CAPITAL COST OF MICROWAVE SYSTEMS:

These costs include the transmission facilities required to provide the proposed broadcasting services, but exclude the cost of the broadcasting stations. It was assumed that the video signal from Fox Harbour will be carried on the proposed southern microwave system to Cartwright, and that the proposed earth station at Nain will be equiped with a TV receiver to serve the community.

Attachment 14 gives a breakdown of the installed equipment and the site development costs for the proposed microwave systems. Most of the microwave sites under consideration have no source of power or access roads, and are far removed from any regular transportation lanes.

The cost of generating electrical power required to operate communication facilities varies widely depending on the mode of generation used. One of the least expensive modes is to use a wind-driven generator. Bell Canada has undertaken field trials to test the effectiveness of such a generator in northern Canada. Although the results have so far been disappointing, Bell is carrying out new field trials with an improved version. Other modes of power generation, such as the diesel generator and the propane-driven thermoelectric converter, are more expensive. In addition, they require substantial building space and weatherproof storage facilities capable of holding enough fuel for an entire winter's consumption. Nuclear energy was also considered as a possible source of electrical power generation for isolated microwave sites. Although such a project is technically feasible, the development cost of this compact generator is prohibitive unless mass-produced. Governmental involvement could, however, make compact nuclear generators a viable source of electric power for isolated telecommunications installations. The cost of electrical power required at the isolated sites was based on the least expensive mode of generation, which is to use wind-driven generators.

Many of the proposed microwave sites will be accessible only by helicopters. This will eliminate the cost of access roads but will increase the maintenance cost.

The total cost of all the proposed microwave sites is indicated below:

Site	Cost	
Nain	$214,900	
Iglosiatik Island	$276,500	
Nunaksaluk Island	$360,800	
Davis Inlet	$108,500	
Hopedale	$315,200	
Makkovik R.R.	$382,500	
Postville	$107,500	
Makkovik C.O.	$107,500	
Sub-total		$1,873,400

Site	Cost	
Cartwright	$206,500	
Cape Greep	$297,600	
Black Tickle	$305,900	
Frenchman's Island	$285,600	
George's Cove	$289,100	
Fox Harbour	$172,100	
Sub-total		$1,556,800
TOTAL		$3,430,200

The costs developed above include the transmission facilities required to provide high grade toll facilities as follows:

a) Hopedale Section:

3 circuits from Nain to Hopedale
3 circuits from Davis Inlet to Hopedale
3 circuits from Postville to Hopedale
3 circuits from Makkovik to Hopedale

The cost of the 12 circuits required between Hopedale and Goose Bay, on the Polevault North System, which provide access to the operator in Goose Bay are not included in this study.

It is assumed that there is no TV requirement on this route. Television reception at Nain is assumed to be provided by a satellite earth station.

b) Cartwright Section:

3 circuits from Fox Harbour to Cartwright
3 Circuits form Black Tickle to Cartwright
TV channel from Fox Harbour to Cartwright

CAPITAL COST OF VHF SYSTEMS

This cost study is based on the use of Rural Radio Telephone equipment (Extended Radio Service). Up to 10 satellite stations could be used with one base station. The total cost of the proposed VHF Rural Radio Telephone system is as follows:

Community	Cost
Paradise River	$31,000
Grady Island	$31,000
Packs Harbour	$31,000
Cartwright (base station)	$41,000
Indian Tickle	$31,000
Spotted Island	$31,000
Batteau	$31,000
Seal Island	$31,000
Venison Tickle	$31,000
Black Tickle (base station)	$41,000
Sandy Hook	$31,000
St. Frances Harbour's Bight	$31,000
Matthew's Cove	$31,000
Indian Cove	$31,000
Fox Harbour (base station)	$41,000
Rigolet	$31,000
Repeater	$100,000
North West River	$41,000
TOTAL	$667,000

Farinon Electric of Canada Ltd. is proposing to market in the future a new vintage of Extended Radio Service equipment, operating in the 1427-1525 MHZ band. The service is called Subscriber Radio System and the modulation used is FM/TDM with pulse width modulating the FM carrier. This vintage of equipment could provide an improved service at a reduced cost.

CAPITAL COST OF HF SYSTEMS

The cost of installing HF Radio sets, antennas and supporting structures will be approximately $40,000 per site. As there is a total of seven new sites to be served, the total cost of the proposed HF system is about $280,000.

The total cost of this improvement program will then be as follows:

- Cost of proposed microwave systems	$3,430,200
- Cost of proposed VHF systems	$ 667,000
- Cost of proposed HF systems	$ 280,000
- Cost of proposed Exchange improvement	$ 106,100
Total capital cost of proposed improvement program	$4,483,300

The annual charges incurred by N.T. Co. are estimated to be 30% of the total cost of the improvement program. These annual charges include the following:

-Capital recovery

-Wages of operating and maintenance personnel

-Wage of overhead and administration personnel

-Outside plant maintenance

-Fuel

-Replacement parts

-Services (water, utility, power, etc.)

-Transportation (material and personnel)

-Leased facilities

-Taxes, insurance, etc.

-Contingency expenses.

Consequently, the annual charges that would be incurred are as follows:

Annual charges of the improvement program	$1,344,990
Annual leasing cost of the earth station at Nain	$ 80,000
Total annual charges of the improvement program	$1,424,990

ALTERNATIVE IMPROVEMENT PROGRAM

This alternative replaces the proposed terrestrial microwave systems with a number of satellite earth stations. The proposed Exchange improvements, VHF and HF systems mentioned above remain basically unchanged (except for Rigolet, which will be served by an earth station instead of VHF facilities). Attachment 15 indicates the earth stations required under this alternative.

COST OF ALTERNATIVE IMPROVEMENT PROGRAM

The cost of the exchange and HF facilities indicated above remains the same for this alternative. However, the cost of the VHF facilities would be reduced by $172,000, which was allocated for linking Rigolet with North West River. In addition, the cost of microwave facilities, indicated in the previous improvement plan, would be replaced by the cost of the satellite earth stations outlined in this alternative.

Cost of Earth Stations

The different earth station configurations required at the locations indicated on Attachment 15 are described on Attachment 16. In addition, the leasing cost of the earth stations and the related capital expenditures that would be incurred by N.T. Co. are indicated on the same Attachment.

The Telesat leasing cost indicated on Attachment 16 does not include the leasing cost of the thin route transponder, which has a maximum capacity of 60 voice channels. This transponder has been leased by Bell Canada to serve 17 earth stations in northern Canada, none of them in Labrador. Initial utilization by these 17 locations is estimated to be 34 voice channels, which means that the present thin route transponder can accommodate the additional 23 voice channels required to serve Labrador, as per this proposal. However, this will leave only 3 spare channels on the transponder to meet any future growth requirements.

Experience derived from introducing thin route services to the initial locations on pre-assigned circuits will assist in assessing traffic load and routing patterns. This would provide essential information for the planning of the future development of the system. On exhaustion

of the present thin route transponder, sharing of the pool of available circuits by means of a fully variable demand assigned system, better known as time division multiple access system, would improve the utilization by up to a factor of three.

Capital Cost of VHF Systems

As explained above, the cost of the VHF systems proposed under this alternative will be approximately $495,000.

Capital Cost of HF Systems

The cost of proposed HF systems will remain $280,000. The total capital cost of this alternative, for improving communications services on the coast of Labrador, will be as follows:

- Capital expenditures related to proposed earth stations	$ 370,000
- Cost of proposed VHF systems	$ 495,000
- Cost of proposed Exchange Improvement	$ 106,100
- Cost of proposed HF systems	$ 280,000
Total capital cost of alternative proposal	$1,251,100

The annual charges to be incurred under this alternative would be as follows:

- Annual charges of alternative proposal (30% of $1,251,100)	$ 375,330
- Annual leasing cost of earth stations	$ 689,000
Total annual charges of alternative proposal	$1,064,330

NETWORK CONSIDERATIONS

Most of the communications services improvements proposed in this study were related to the Labrador coast. All exchange offices on the coast, except for some in the most southern region of Labrador, home on the toll office at Goose Bay. It is, therefore, important to have reliable transmission facilities on the coast. In the case of the proposed microwave systems, traffic between communities on the northern system and Goose Bay would be routed via Hopedale on the Northern Polevault system.

Similarly, traffic between communities on the southern system and Goose Bay would be routed via Cartwright on the southern Polevault system. As for the alternative proposal, using thin route satellite services, Cartwright and Hopedale will again be linked to Goose Bay by use of the Polevault systems, and were therefore not provided with thin route service.

Traffic between any two locations relying on thin route services will make use of two satellite hop connections. In contrast, traffic to and from the south will require the use of only one hop. Due to the delay factor, two-hop calls are somewhat less than satisfactory and the objective should be to eliminate them either through different operating procedure or more sophisticated circuitry at the earliest possible date.

CONCLUSIONS

This portion of the study has developed two conceptual system models designed to improve communication services on the coast of Labrador. The first proposed model has as its major backbone routes, microwave systems on the northern and southern coasts of Labrador. The second proposed model makes use of the Anik northern thin route services. Due to the tandem satellite connections for Intra-North traffic and its inherent delay problems, the second proposal has a grade of service somewhat less satisfactory. However, the total annual charges pertaining to the implementation of the second proposal are $1,064,330, compared to $1,424,990 for the first proposal.

A third model considered substituting VHF facilities for the microwave systems indicated in the first model. However, this model was not studied in detail since VHF systems have no TV transmission capability. In addition, the cost savings over the first model were not considered to be substantial since the site development costs, which represent more than 50% of the total cost for the microwave systems, will remain basically the same for both models.

The second proposal therefore seems to be the most realistic option for improving services on the Labrador coast. However, the question is raised whether the circuit capacity of the thin route transponder could adequately meet the circuit requirements of the north over the lifetime of the Anik I satellite. If not, the carriers will have to face the choice of either curtailing any circuit expansion beyond the capacity of the present transponder, or incurring major expenditures for introducing Time Division Multiple Access equipment in all

earth stations operating on the thin route transponder. Even if the decision is made today to adopt the latter option, it is expected that by the time the T.D.M.A. equipment is in service the Anik I satellite will have less than half of its usable life left.

The annual charges developed for the second proposal do not reflect the leasing cost of the thin route transponder. Due to the lack of reliable estimates of the circuit growth requirements for Northern Canada, it was assumed that the 23 circuits required under the second proposal could be accomodated on the present thin route transponder without exhausting its capacity before the end of the satellite's life. If the leasing cost of the transponder is fully allocated to every circuit in use, then the total annual charges for the second proposal would increase from $1,064,330 to $1,926,830.

Implicit in all the foregoing is the assumption that the development of communications facilities and the development of broadcasting (including TV) facilities should be coordinated in Labrador. Wherever possible, facilities should be utilized jointly. As the foregoing cost figures illustrate, the ecomonics of systems development in Labrador is such that some services might not be developed if resources have to be found for two parallel sets of facilities. Discussions with the various organizations concerned have clearly shown that present planning is not being coordinated in this respect.

CHAPTER V - References

(1) Department of Communications; Northern Communications, Telecommission Study 8(c); Ottawa, 1971; page 53.

COMMUNICATIONS SERVICES IN LABRADOR COMMUNITIES

TABLE I

COMMUNITY	POPULATION SUMMER	POPULATION WINTER	TYPE OF BELL CANADA SERVICE	OTHER TYPES OF SERVICE	COORDINATES LAT.	COORDINATES LONG.	POPULATION TREND INCREASE - DECREASE (%)	REMARKS
L'Anse-au-Clair	290	290	Exchange		51° 25'	57° 05'	(1961-71) + 42%	Cable with L'Anse-au-Loup
Forteau	312	312	Exchange	LA,IGA,RCMP,EPA	51 28	56 58	(1965-71) + 30%	Cable with L'Anse-au-Loup
L'Anse-au-Loup	448	448	Exchange		51 31	56 50	(1961-71) + 31%	VHF Microwave with Corner Brook
West St. Modeste	294	294	Exchange		51 36	56 42	(1961-68) +108%	Cable with L'Anse-au-Loup
Red Bay	296	296	Exchange		51 44	56 25	(1961-71) + 13%	VHF with L'Anse-au-Loup
Barge Bay*	36	-	[illegible]		51 48	56 13	(1956-65) + 44%	34 miles from L'Anse-au-Loup
Henley Harbour	35	-	Toll Public		51 59	55 51	(1956-71) - 55%	VHF with L'Anse-au-Loup
Pitts Arm	-	59	Toll Public	[illegible] LA	52 01	55 54	d.m.	VHF with L'Anse-au-Loup
Camp Island*	35	4	- -		52 10	55 39	(1921-65) + 67%	69 miles from L'Anse-au-Loup
Lodge Bay	-	102	Toll Public	[illegible]	52 14	55 40	(1961-66) + 7%	VHF with L'Anse-au-Loup
Cape Charles	90	-	Toll Public		52 13	55 38	(1945-71) + 2%	VHF with L'Anse-au-Loup
Indian Cove*	60	17	- -		52 16	55 39	(1956-65) +107%	72 miles from L'Anse-au-Loup
Matthew's Cove*	60	-	[illegible]		52 17	55 36	(1951-71) - 33%	72 miles from L'Anse-au-Loup
Battle Harbour	112	62	Toll Public	DOT [illegible]	52 16	55 35	(1956-65) + 9%	VHF with L'Anse-au-Loup
Mary's Harbour	73	283	Exchange	[illegible] IGA,LA	52 19	55 50	(1956-66) + 33%	VHF;UHF with L'Anse-au-Loup
Trap Cove*	34	-	[illegible]	[illegible]	52 17	55 36	(1945-65) 0%	72 miles from L'Anse-au-Loup
Fox Harbour	180	233	Exchange	LA	51 38	56 42	(1956-66) + 14%	UHF with L'Anse-au-Loup
Murray's Harbour*	6 Fam.	-	- -		52 27	55 43	d.m.	80 miles from L'Anse-au-Loup

COMMUNICATIONS SERVICES IN LABRADOR COMMUNITIES

COMMUNITY	POPULATION SUMMER	POPULATION WINTER	TYPE OF BELL CANADA SERVICE	OTHER TYPES OF SERVICE	COORDINATES LAT.	COORDINATES LONG.	POPULATION TREND INCREASE - DECREASE (%)	REMARKS
Batteau	116	-	Toll Public		53° 25'	55° 47'	(1956-63) +190%	HF with Goose Bay
Black Tickle	164	164	Exchange	DOT	53 28	55 45	(1961-71) +445%	HF with Goose Bay
Spotted Island	147	-	Toll Public	DOT	53 30	55 45	(1956-65) +110%	HF with Goose Bay
Porcupine Harbour	-	3 fam.	Toll Public		53 23	56 00	(1965-71) 0%	HF with Goose Bay
Indian Tickle	47	-	Toll Public		52 57	60 53	(1965-71) 28%	HF with Goose Bay
Paradise River	-	146	Toll Public		52 27	57 17	(1961-71) - 8%	HF with Goose Bay
Grady Island*	88	-	-		53 48	56 25	d.m.	159 miles from L'Anse-au-Loup
Cartwright	753	753	Exchange	DOT, IGA, RCMP, FORESTRY, LA	53 42	57 01	(1961-71) + 53%	Troposcatter to Goose Bay
Eagle River	d.m.		-	DOT	53 36	57 26	d.m.	120 miles from Goose Bay
Separation Point*	43	6	-	GOOSE BAY OUTFITTERS	53 37	57 26	(1956-65) + 11%	127 miles from Goose Bay
Packs Harbour	125	-	Toll Public		53 51	56 59	d.m.	HF with Goose Bay
West Bay*	37	-	-		54 08	57 25	(1936-65) +105%	137 miles from Goose Bay
Mud Lake	86	86	Exchange		53 19	60 10	(1951-71) - 9%	VHF with Goose Bay
Goose Bay/Happy Valley	7,000	7,000	Exchange	IGA, RCMP, EPA, DOT	53 20	60 25	d.m.	Troposcatter with Rimouski
North West River	931	931	Exchange	IGA, PW, SS&R	53 32	60 08	(1961-71) + 25%	VHF with Goose Bay
Rigolet	43	139	Toll Public	DOT, PW, SS&R, H.BAY	54 11	58 26	(1961-66) + 29%	HF with Goose Bay
Smokey	31	-	Toll Public		54 28	53 14	d.m.	HF with Goose Bay
Indian Harbour*	50	-	-		54 27	57 13	d.m.	153 miles from Goose Bay

COMMUNICATIONS SERVICES IN LABRADOR COMMUNITIES

COMMUNITY	POPULATION SUMMER	POPULATION WINTER	TYPE OF BELL CANADA SERVICE	OTHER TYPES OF SERVICE	COORDINATES LAT.	COORDINATES LONG.	POPULATION TREND INCREASE - DECREASE (%)	REMARKS
Sandy Hook*	71	-	-		52° 32'	55° 36'	d.m.	81 miles from L'Anse-au-Loup
Port Hope Simpson	250	489	Exchange	LA	52 33	56 18	(1956-66) + 57%	UHF with L'Anse-au-Loup
St. Francis Harbour Bight*	63	-	-		52 33	55 43	(1965-71) +110%	85 miles from L'Anse-au-Loup
William's Harbour	75	-	Toll Public		52 33	55 47	(1965-71) + 21%	VHF with L'Anse-au-Loup
Rickson's Cove*	-	41	-		52 35	55 53	(1961-66) + 24%	81 miles from L'Anse-au-Loup
Fishing Ships Harbour	24	-	Toll Public	DOT	52 36	55 47	d.m.	VHF with L'Anse-au-Loup
Occasional Harbour*	32	-	-		52 40	55 48	d.m.	92 miles from L'Anse-au-Loup
George's Cove	75	-	Toll Public		52 34	55 46	(1965-71) - 22%	VHF with L'Anse-au-Loup
Pinsent Arm	16	16	Toll Public		52 41	55 53	d.m.	VHF with L'Anse-au-Loup
Square Islands	95	-	Toll Public		52 44	55 50	(1965-71) - 3%	VHF with L'Anse-au-Loup
Charlottetown		146	Toll Public		52 06	56 07	d.m.	VHF with L'Anse-au-Loup
Triangle	46	-	Toll Public		52 50	55 51	(1935-65) +171%	HF with Goose Bay
Snug Harbour	36	-	Toll Public		52 53	55 52	(1951-65) +227%	VHF with L'Anse-au-Loup
Tub Harbour	13	-	Toll Public		52 57	55 48	(1921-65) - 44%	HF with Goose Bay
Venison Tickle*	52	-	-		52 58	55 47	(1935-65) + 40%	110 miles from L'Anse-au-Loup
Frenchman's Island	17	-	Toll Public		53 13	55 44	d.m.	HF with Goose Bay
Seal Island*	52	-	-		53 13	55 44	(1956-65) +136%	128 miles from L'Anse-au-Loup

COMMUNICATIONS SERVICES IN LABRADOR COMMUNITIES

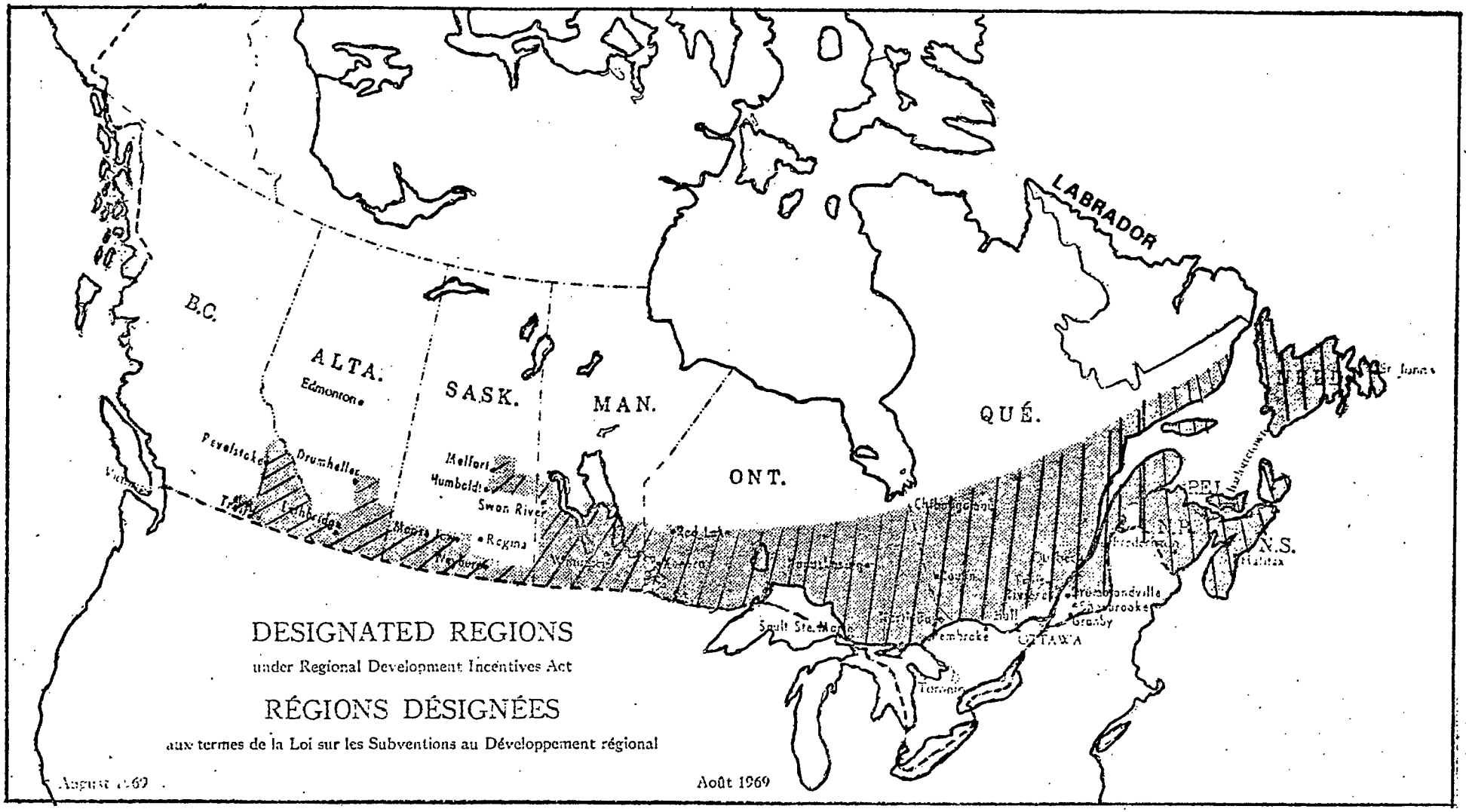
COMMUNITY	POPULATION SUMMER	POPULATION WINTER	TYPE OF BELL CANADA SERVICE	OTHER TYPES OF SERVICE	COORDINATES LAT.	COORDINATES LONG.	POPULATION TREND INCREASE - DECREASE (%)		REMARKS
Horse Harbour*	34	-	-		54° 33'	57° 12'	d.m.		150 miles from Goose Bay
Emily Harbour*	30	-	-		54 33	57 11	d.m.		158 miles from Goose Bay
Ironbound*	30	-	-		55 10	58 46	d.m.		144 miles from Goose Bay
Makkovik	248	350	Exchange	SS&R,IGA,FORESTRY, LA,DOT,PW	55 05	59 11	(1956-66)	+250%	HF with Goose Bay
Ailik*	41	-	-		55 13	59 13	d.m.		136 miles from Goose Bay
Postville	55	112	Exchange	IGA,PW,SS&R	54 54	59 47	(1956-66)	+ 18%	HF with Goose Bay
Hopedale	258	351	Exchange	SS&R,IGA,RCMP,LA DOT,PW	55 28	60 23	(1956-65)	+ 22%	Tropo with Goose Bay
Davis Inlet	152	152	Exchange	SS&R,CMI,PW	55 52	60 52	(1956-66)	+ 14%	HF with Goose Bay
Nain	708	708	Exchange	SS&R,IGA,RCMP,LA PW	56 32	61 41	(1956-71)	+220%	HF with Goose Bay
Young's Harbour*	50	-	-		56 38	61 04	d.m.		240 miles from Goose Bay
Black' Island*	52	-	-		56 47	61 20	d.m.		240 miles from Goose Bay
Churchill Falls	2357	2357	Exchange	RCMP,EPA,DOT	53 36	64 19	d.m.		Microwave with Sona Lake + Troposcatter with Rimouski
Twin Falls	82	82	Exchange	EPA	53 30	64 32	(1966-1971)	- 23%	UHF with Sona Lake Troposcatter with Rimouski
Wabush/Labrador City	5000	5000	EXCHANGE	EPA,DOT	52 55	66 52			UHF with Emeril Troposcatter with Rimouski
Eagle Lake	-	-	Toll Public (Goose Bay Outfitters)	-	52 43	59 15	-	-	Fishing Camps
Little Minipi Lake	-	-	Toll Public (Goose Bay Outfitters)	-	52 30	60 37			Fishing Camps

COMMUNICATIONS SERVICES IN LABRADOR COMMUNITIES

COMMUNITY	POPULATION SUMMER	POPULATION WINTER	TYPE OF BELL CANADA SERVICE	OTHER TYPES OF SERVICE	COORDINATES LAT.	COORDINATES LONG.	POPULATION TREND INCREASE - DECREASE (%)	REMARKS

NOTES:

d.m.	-	Data Missing
DOT	-	Department of Transport
EPA	-	Eastern Provincial Airways
IGA	-	International Grenfell Association
PW	-	Dept. of Public Welfare of Newfoundland
OMI	-	Oblate Mission
FORESTRY	-	Newfoundland Forest Service
LA	-	Labrador Airways
*	-	Communities not serviced (with seasonal population over 30)
SS&R	-	Dept. of Social Services & Rehabilitation (Labrador Services) of Newfoundland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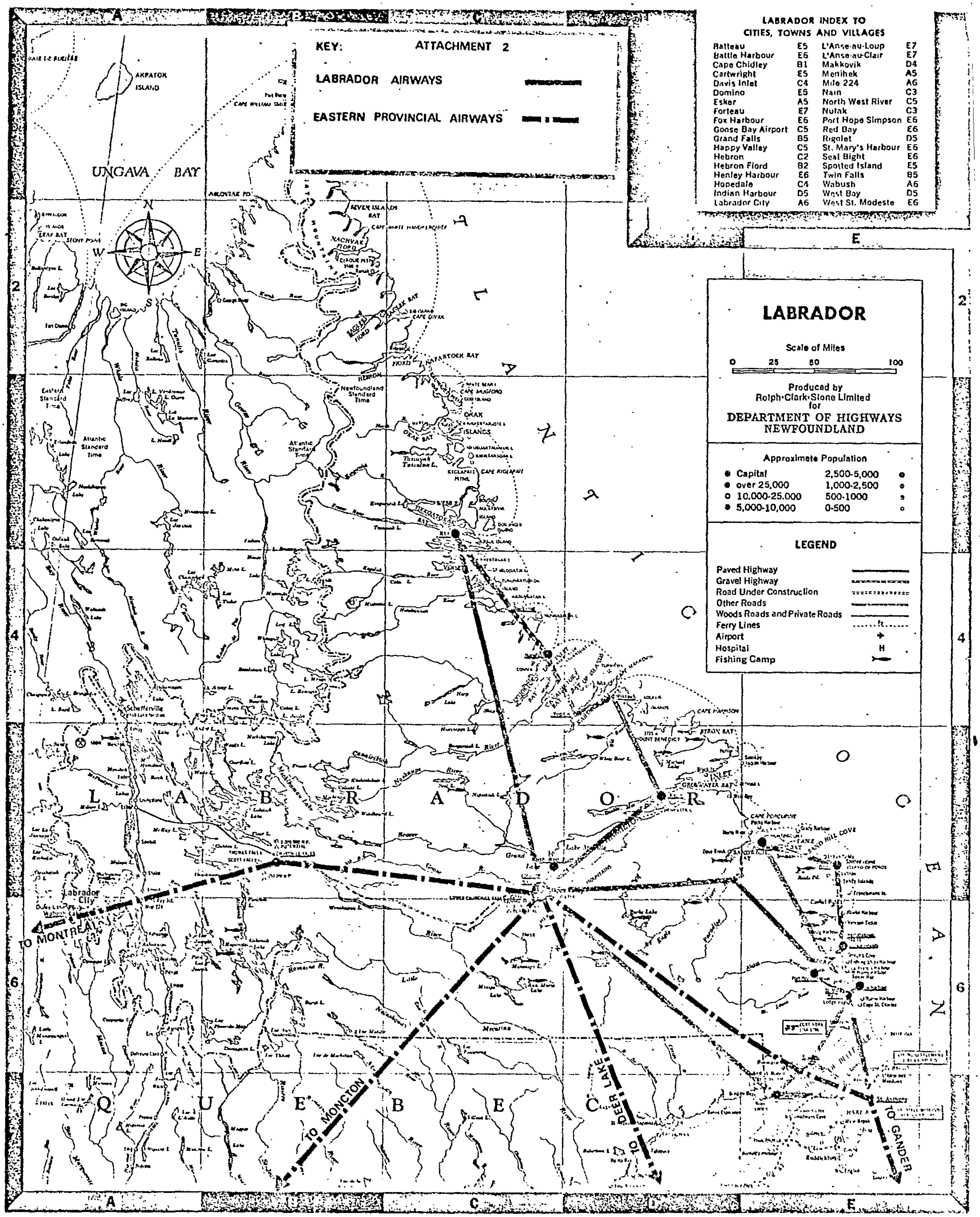
ALTA.
Edmonton
SASK.
MAN.
ONT.
QUÉ.
LABRADOR
Peyelstoke
Drumheller
Lethbridge
Melfort
Humboldt
Swan River
Regina
Moose Jaw
Sault Ste. Marie
Pembroke
OTTAWA
Granby
Sherbrooke
N.S.
DESIGNATED REGIONS
under Regional Development Incentives Act
RÉGIONS DÉSIGNÉES
aux termes de la Loi sur les Subventions au Développement régional
August 1969
Août 1969



KEY: ATTACHMENT 2
LABRADOR AIRWAYS
EASTERN PROVINCIAL AIRWAYS
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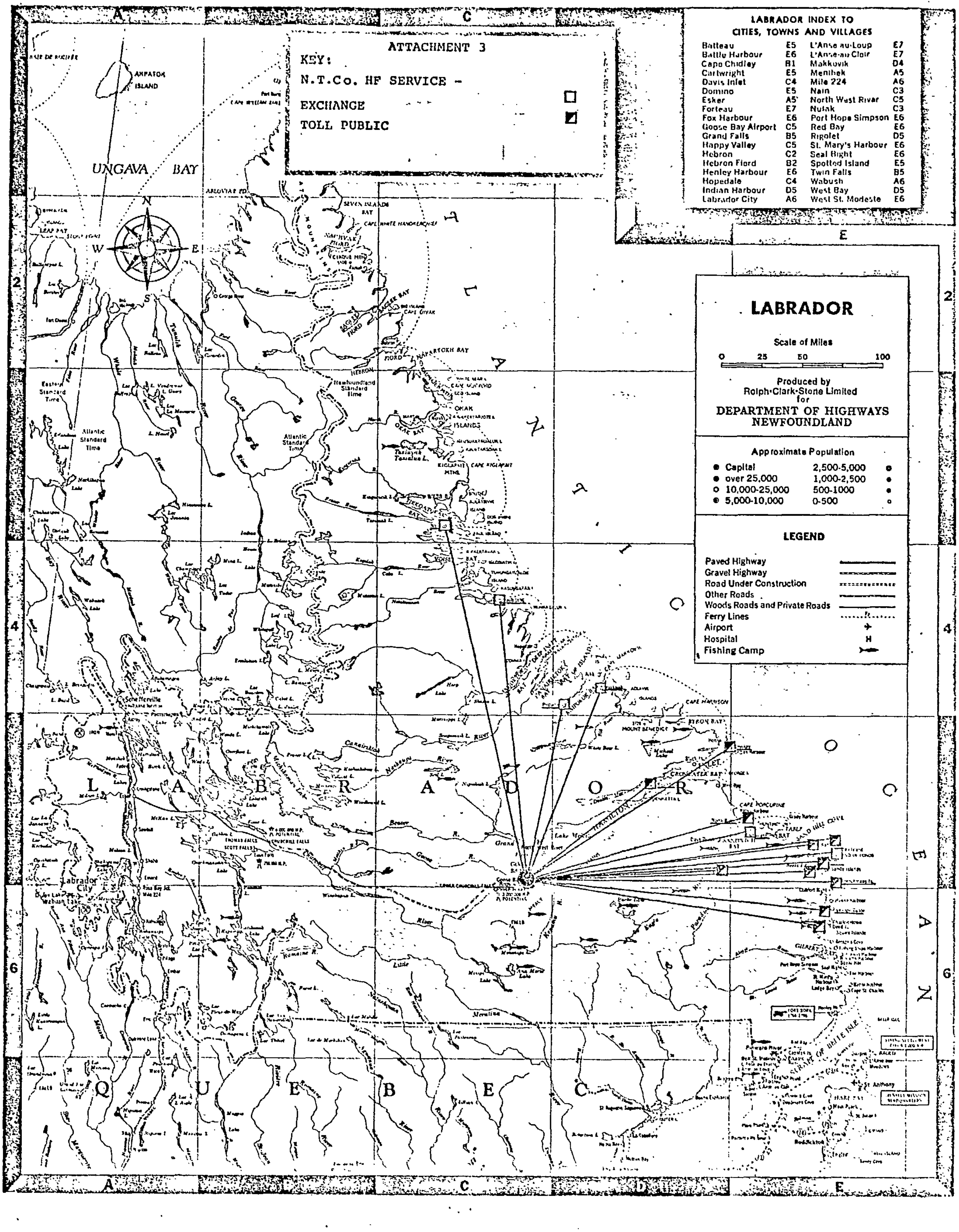
Batteau E5
Battle Harbour E6
Cape Chidley B1
Cartwright E5
Davis Inlet C4
Domino E5
Esker A5
Forteau E7
Fox Harbour E6
Goose Bay Airport C5
Grand Falls B5
Happy Valley C5
Hebron C2
Hebron Fiord B2
Henley Harbour E6
Hopedale C4
Indian Harbour D5
Labrador City A6
L'Anse-au-Loup E7
L'Anse-au-Clair E7
Makkovik D4
Menihek A5
Mile 224 A6
Nain C3
North West River C5
Nutak C3
Port Hope Simpson E6
Red Bay E6
Rigolet D5
St. Mary's Harbour E6
Seal Bight E6
Spotted Island E5
Twin Falls B5
Wabush A6
West Bay D5
West St. Modeste E6
LABRADOR
Scale of Miles
0 25 50 100
Produced by Ralph·Clark·Stone Limited for
DEPARTMENT OF HIGHWAYS NEWFOUNDLAND
Approximate Population
Capital
over 25,000
10,000-25,000
5,000-10,000
2,500-5,000
1,000-2,500
500-1000
0-500
LEGEND
Paved Highway
Gravel Highway
Road Under Construction
Other Roads
Woods Roads and Private Roads
Ferry Lines
Airport
Hospital
Fishing Camp
UNGAVA BAY
AKPATOK ISLAND
ATLANTIC OCEAN
LABRADOR
QUEBEC
Labrador City
TO MONTREAL
TO MONCTON
TO DEER LAKE
TO GANDER
Newfoundland Standard Time
Atlantic Standard Time
Eastern Standard Time
Schefferville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TOLL PUBLIC
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Cape Chidley B1
Cartwright E5
Davis Inlet C4
Domino E5
Esker A5
Forteau E7
Fox Harbour E6
Goose Bay Airport C5
Grand Falls B5
Happy Valley C5
Hebron C2
Hebron Fiord B2
Henley Harbour E6
Hopedale C4
Indian Harbour D5
Labrador City A6
L'Anse au Loup E7
L'Anse-au-Clair E7
Makkovik D4
Menihek A5
Mile 224 A6
Nain C3
North West River C5
Nutak C3
Port Hope Simpson E6
Red Bay E6
Rigolet D5
St. Mary's Harbour E6
Seal Bight E6
Spotted Island E5
Twin Falls B5
Wabush A6
West Bay D5
West St. Modeste E6
LABRADOR
Scale of Miles
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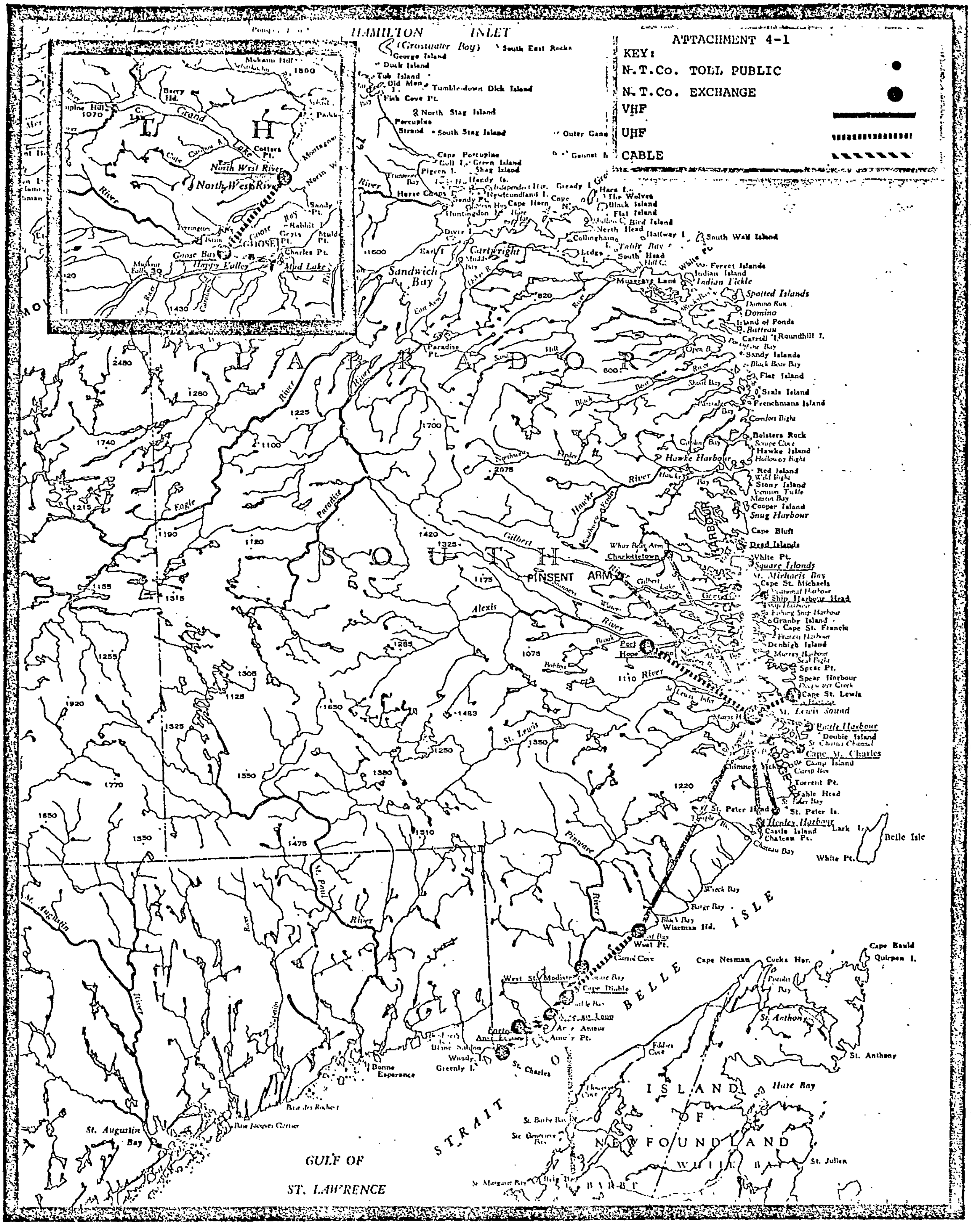
Produced by
Ralph-Clark-Stone Limited
for
DEPARTMENT OF HIGHWAYS
NEWFOUNDLAND
Approximate Population
Capital
over 25,000
10,000-25,000
5,000-10,000
2,500-5,000
1,000-2,500
500-1000
0-500
LEGEND
Paved Highway
Gravel Highway
Road Under Construction
Other Roads
Woods Roads and Private Roads
Ferry Lines
Airport
Hospital
Fishing Camp
UNGAVA BAY
ATLANTIC OCEAN
LABRADOR
QUEBEC
Labrador City
Schefferville
HEBRON
OKAK
Atlantic Standard Time
Newfoundland Standard Time
Eastern Standard Time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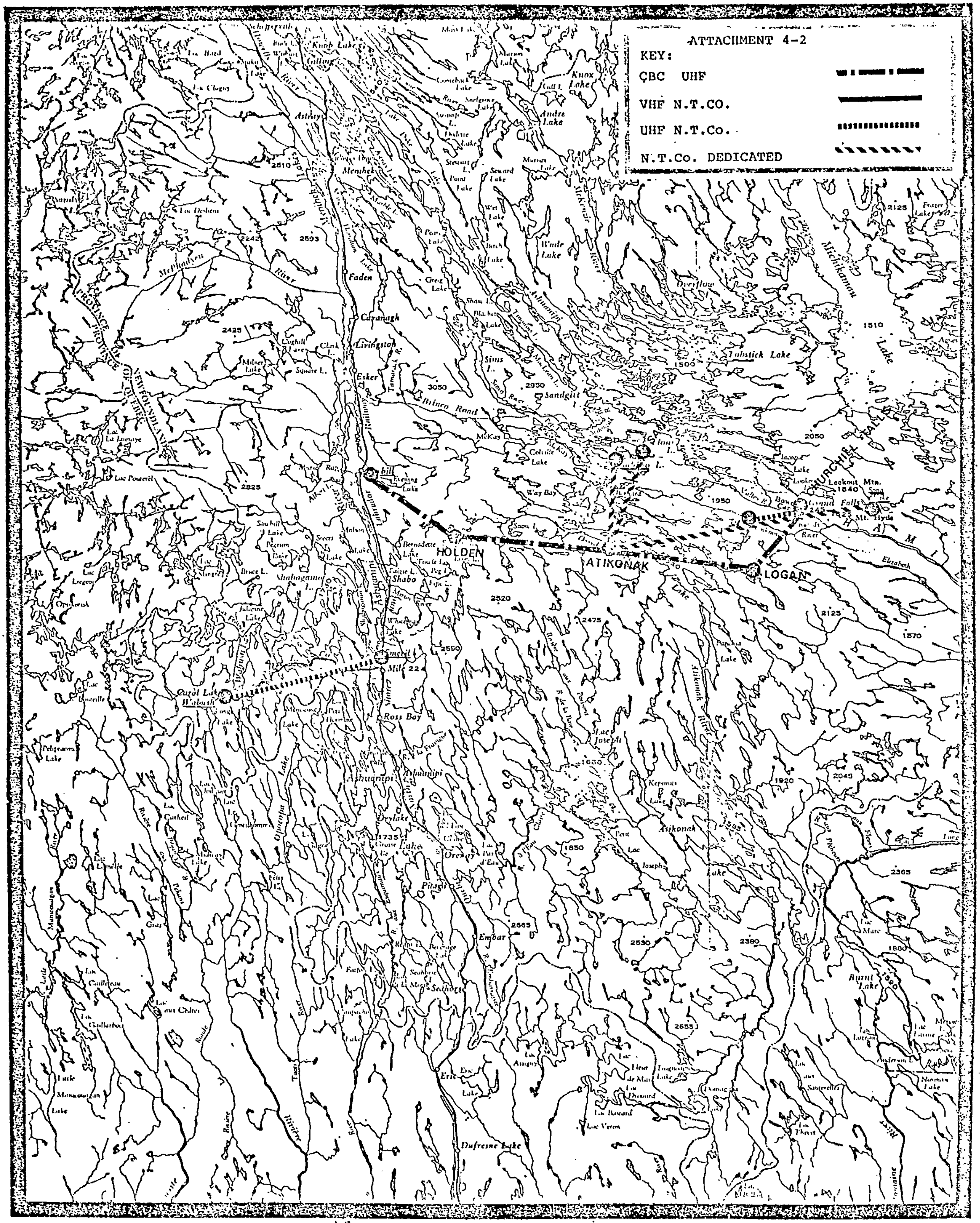
N.T.Co. EXCHANGE
VHF
UHF
CABLE
HAMILTON INLET
North West River
Goose Bay
Happy Valley
Mud Lake
Cartwright
Sandwich Bay
LABRADOR
SOUTH
PINSENT ARM
Charlottetown
Port Hope
Spotted Islands
Hawke Harbour
Square Islands
Ship Harbour Head
Cape St. Lewis
St. Lewis Sound
Battle Harbour
Cape St. Charles
St. Peter Is.
Henley Harbour
Belle Isle
STRAIT OF BELLE ISLE
ISLAND OF NEWFOUNDLAND
St. Anthony
GULF OF ST. LAWRENCE
St. Augustin Bay
Bonne Esperance
West St. Modiste
Cape Diable
St. Charles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VHF N.T.CO.
UHF N.T.Co.
N.T.Co. DEDICATED
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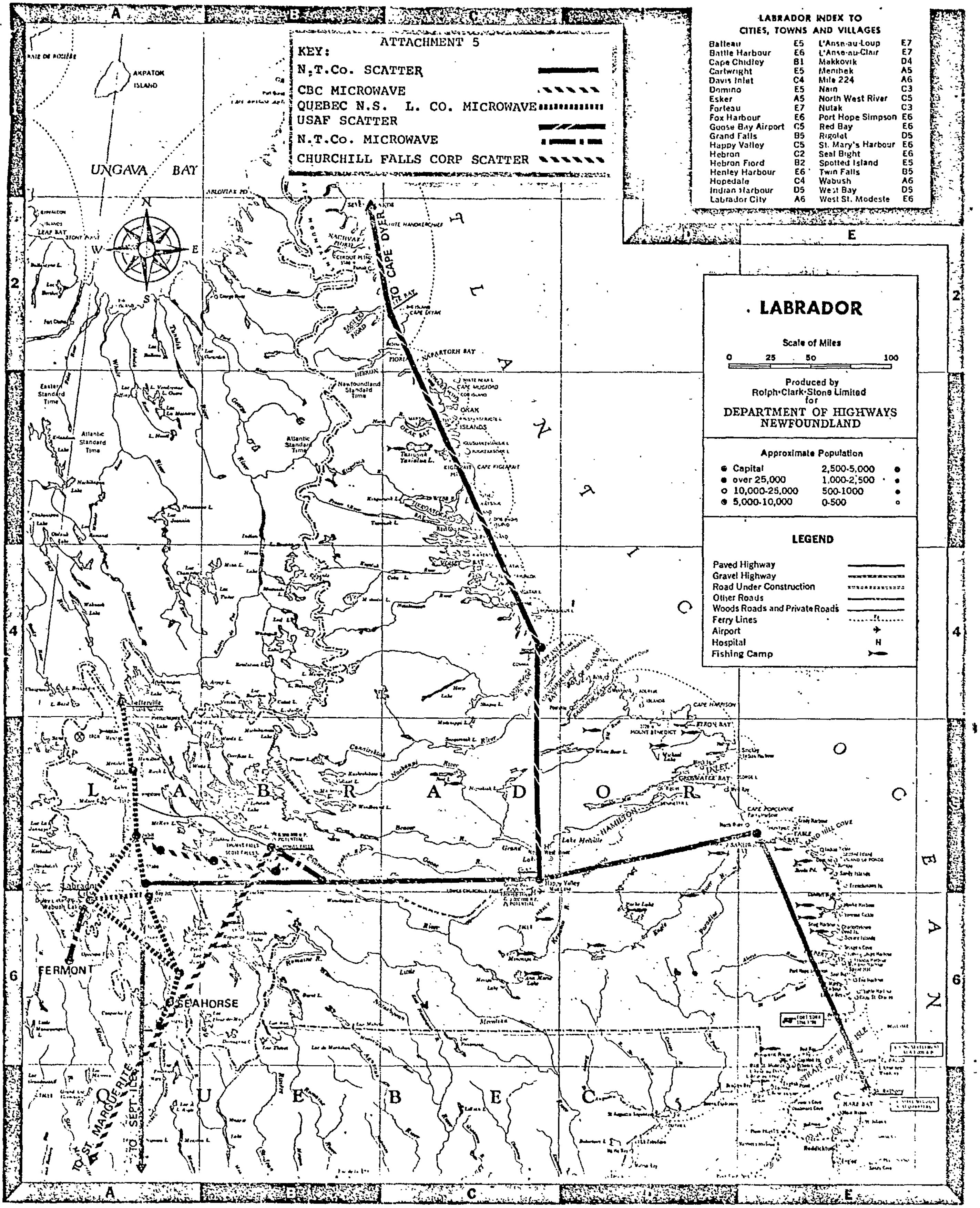
ATIKONAK
LOGAN
CHURCHILL FALLS
Lookout Mtn.
Mt. Hyde
Tubstick Lake
Michikamau
Ashuanipi
Menihek
Esker
Livingston
Cavanagh
Faden
Shabo
Ross Bay
Mile 224
Carol Lake
Wabush
Sandgirt
Andre Lake
Knox Lake
Wade Lake
Dufresne Lake
PROVINCE OF NEWFOUNDLAND
PROVINCE OF QUEBEC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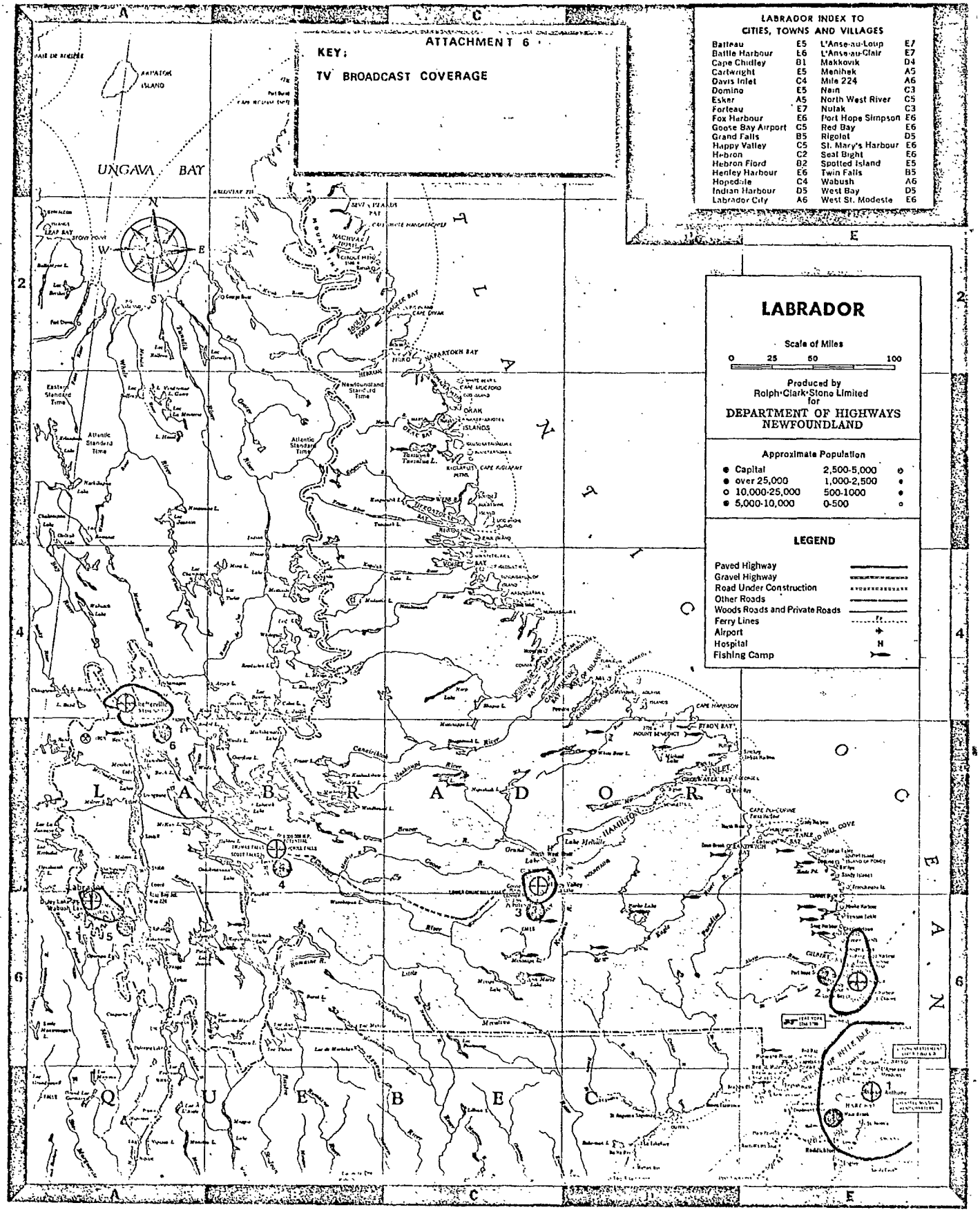
CBC MICROWAVE
QUEBEC N.S. L. CO. MICROWAVE
USAF SCATTER
N.T.Co. MICROWAVE
CHURCHILL FALLS CORP SCATTER
LABRADOR INDEX TO CITIES, TOWNS AND VILLAGES
Batteau E5
Battle Harbour E6
Cape Chidley B1
Cartwright E5
Davis Inlet C4
Domino E5
Esker A5
Forteau E7
Fox Harbour E6
Goose Bay Airport C5
Grand Falls B5
Happy Valley C5
Hebron C2
Hebron Fiord B2
Henley Harbour E6
Hopedale C4
Indian Harbour D5
Labrador City A6
L'Anse-au-Loup E7
L'Anse-au-Clair E7
Makkovik D4
Menihek A5
Mile 224 A6
Nain C3
North West River C5
Nutak C3
Port Hope Simpson E6
Red Bay E6
Rigolet D5
St. Mary's Harbour E6
Seal Bight E6
Spotted Island E5
Twin Falls B5
Wabush A6
West Bay D5
West St. Modeste E6
LABRADOR
Scale of Miles
0 25 50 100
Produced by
Ralph·Clark·Stone Limited
for
DEPARTMENT OF HIGHWAYS NEWFOUNDLAND
Approximate Population
Capital
over 25,000
10,000-25,000
5,000-10,000
2,500-5,000
1,000-2,500
500-1000
0-500
LEGEND
Paved Highway
Gravel Highway
Road Under Construction
Other Roads
Woods Roads and Private Roads
Ferry Lines
Airport
Hospital
Fishing Camp
UNGAVA BAY
TO CAPE DYER
L A B R A D O R
Q U E B E C
ATLANTIC OCEAN
FERMONT
SEAHORSE
TO ST. MARGUERITE
TO SEPT. ILES
HAMILTON INLET
STRAIT OF BELLE ISLE
Eastern Standard Time
Atlantic Standard Time
Newfoundland Standard Time
A B C D E
1 2 3 4 5 6

ATTACHMENT 6



ATTACHMENT 7

COST OF IMPROVING LOCAL SERVICES

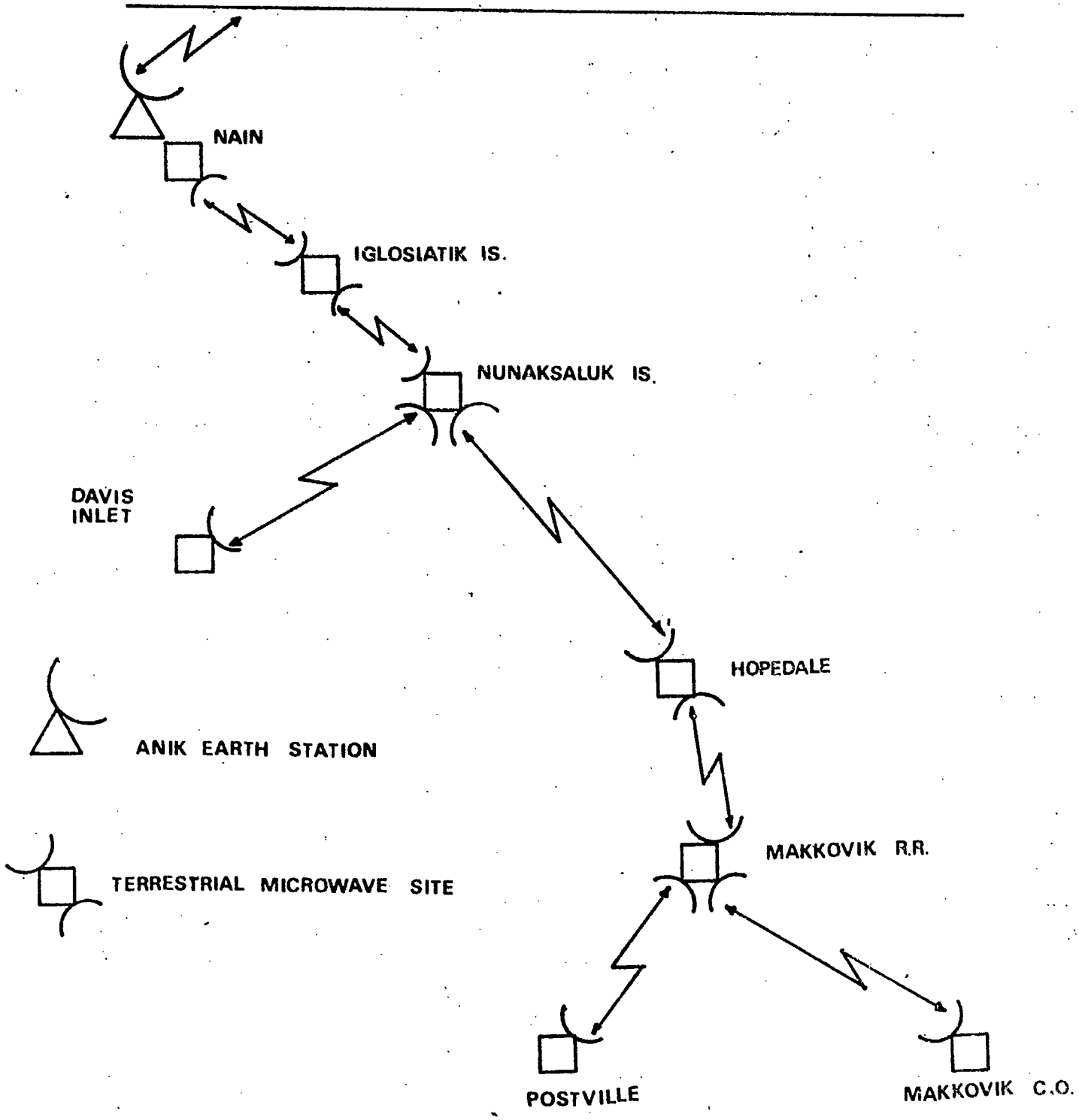
COMMUNITY	COST OF MAIN STATIONS*	COST OF** SWITCHING EQPT.	COST OF TRUNKING EQPT.	COST OF OUTSIDE PLANT	COST OF CENTRAL OFFICE BLDG.	TOTAL COST
Battle Harbour	$1,200	$16,000	$6,000	$10,000	$20,000	$53,200
Rigolet	$ 900	$16,000	$6,000	$10,000	$20,000	$52,900
TOTAL (assuming commercial power available)						$106,100

* Estimated at $50 per main station

** NJ-92 equipment with outgoing operator trunk and incoming selector

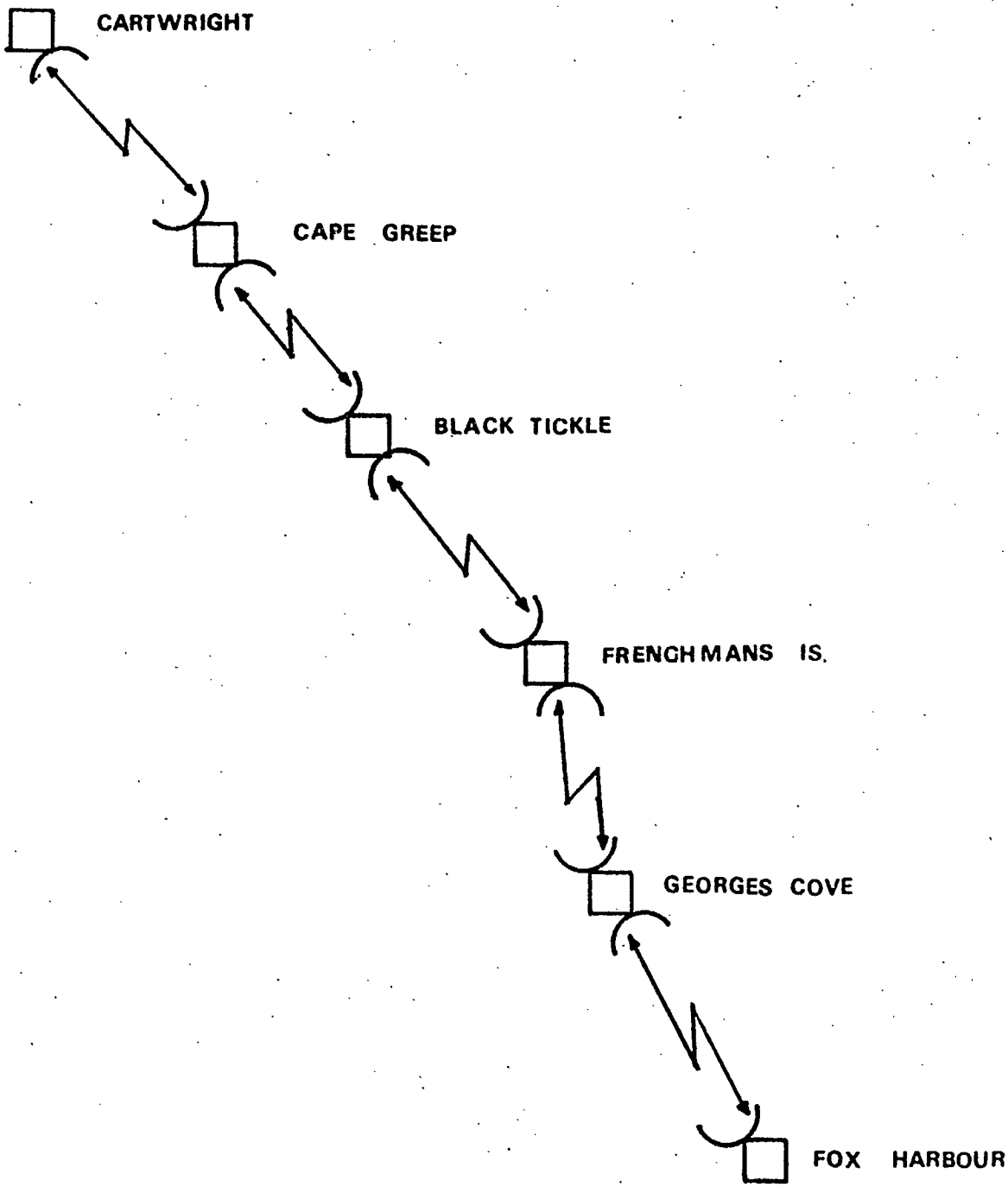
ATTACHMENT 8

PROPOSED MICROWAVE SYSTEM ON THE NORTHERN COAST OF LABRADOR



ATTACHMENT 9

PROPOSED MICROWAVE SYSTEM ON THE SOUTHERN COAST OF LABRADOR



SITE DESIGNATION	GROUND ELEVATION	DISTANCE TO NEAREST COMMUNITY	TOWER HEIGHT	TYPE OF COMMUNITY	TRANSPORTATION	ELECTRIC POWER	HOP LENGTH
Nain (56° 32') (61° 44')	600'	1.5 miles to Nain	100'	Year-round	CN Ferry Labrador Airways	Provided by Labrador Services	
Iglosiatik Island (56° 14') (61° 02')	400'	-	100'	none	none	none	26 miles
Nunaksaluk Island (55° 49') (60° 23')	640'	-	100'	none	none	none	42 miles
Hopedale (55° 29') (60° 17')	560'	2 miles to Hopedale	250'	Year-round	CN Ferry Labrador Airways	Provided by Labrador Services	24 miles
Makkovik R.R. (55° 07') (59° 23')	1000'	6.5 miles to Makkovik	250'	none	none	none	42 miles
Makkovik C.O. (55° 05') (59° 11')	100'	0 miles to Makkovik	0'	Year-round	CN Ferry Labrador Airways	Provided by Labrador Services	6.5 miles

Attachment 10

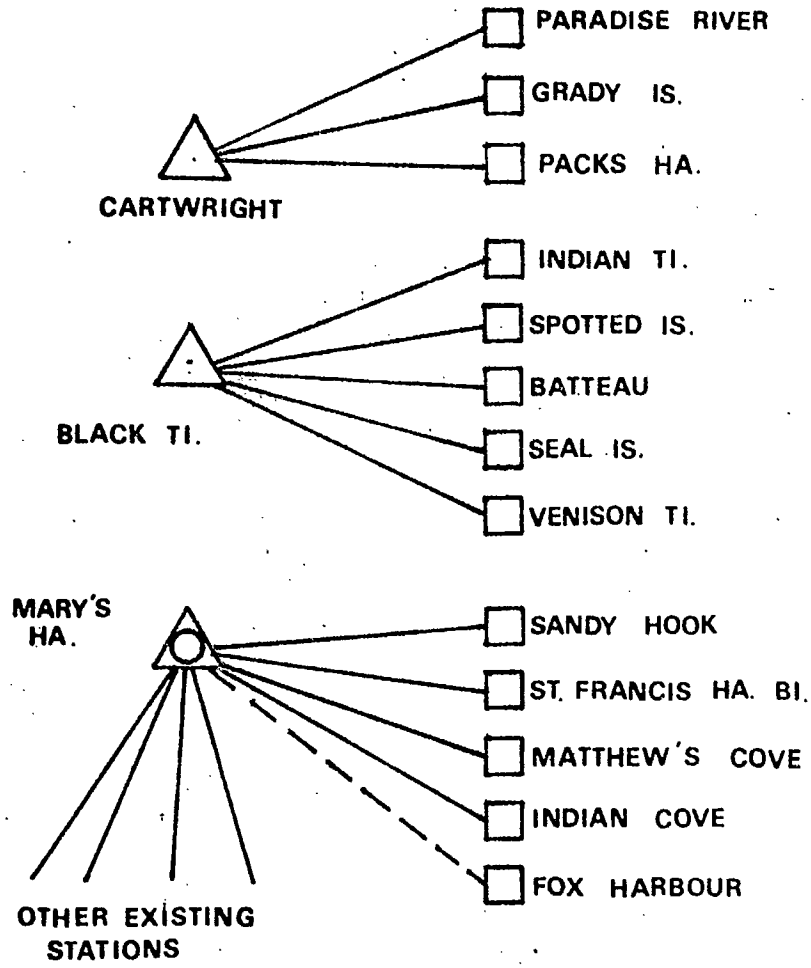
SITE DESIGNATION	GROUND ELEVATION	DISTANCE TO NEAREST COMMUNITY	TOWER HEIGHT	TYPE OF COMMUNITY	TRANSPORTATION	ELECTRIC POWER	HOP LENGTH
Nunaksaluk Is. (55° 49') (60° 23')	640'	-	100'	none	none	none	
Davis Inlet (55° 52') (60° 52')	100'	0 miles to Davis Inlet	0'	Year-round	CN Ferry Labrador Airways	Provided by Labrador Services	26 miles
Makkovik, R.R. (55° 07') (59° 23')	1000'	6.5 miles to Makkovik	250'	none	none	none	
Postville (54° 54') (59° 47')	100'	0 miles to Postville	0'	Year-round	CN Ferry Labrador Airways	Provided by Labrador Services	22 miles

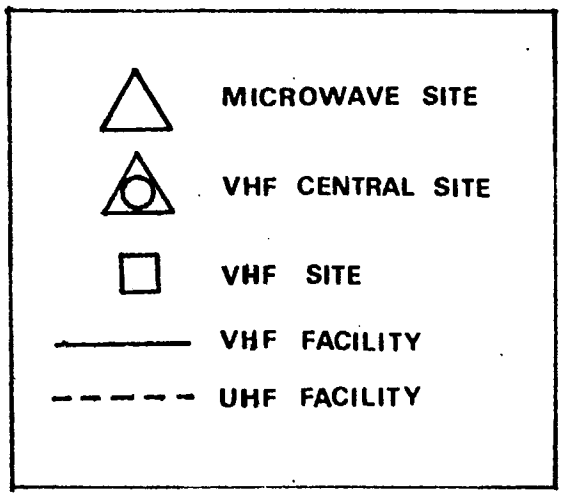
Attachment 10 (Continue

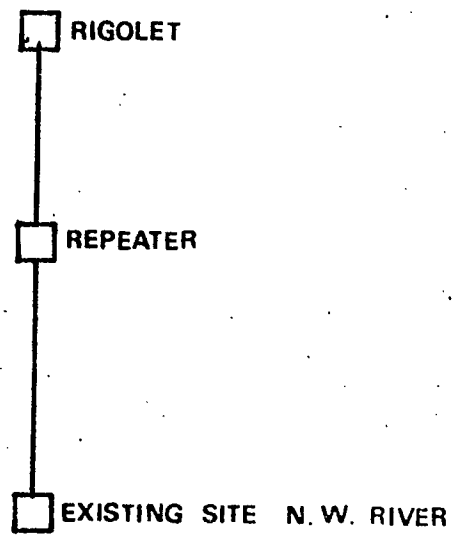
SITE DESIGNATION	GROUND ELEVATION	DISTANCE TO NEAREST COMMUNITY	TOWER HEIGHT	TYPE OF SETTLEMENT	TRANSPORTATION	ELECTRIC POWER	HOP LENGTH
Cartwright (53° 43' 28") (56° 58' 24")	400'	2.5 miles to Cartwright	100'	Year round	CN Ferry Labrador Airways	Provided by Nfld. and Labrador Power Commission	34 miles
Cape Greep (53° 35') (56° 11')	200'	8 miles to Indian Tickle	150'	none	none	none	19.5 miles
Black Tickle (53° 26') (55° 45')	200'	0.8 miles to Black Tickle	150'	Year round	CN Ferry	none	17.5 miles
Frenchman's Is. (53° 12') (55° 42')	200'	0.7 miles to Frenchman's Island	100'	Summer	none	none	38.5 miles
George's Cove (52° 39') (55° 43')	710'	6 miles to George's Cove	100'	none.	none	none	21 miles
Fox Harbour (52° 24') (55° 37')	400'	1 mile to Fox Harbour	0'	Year round	CN Ferry	none	

Attachment 11

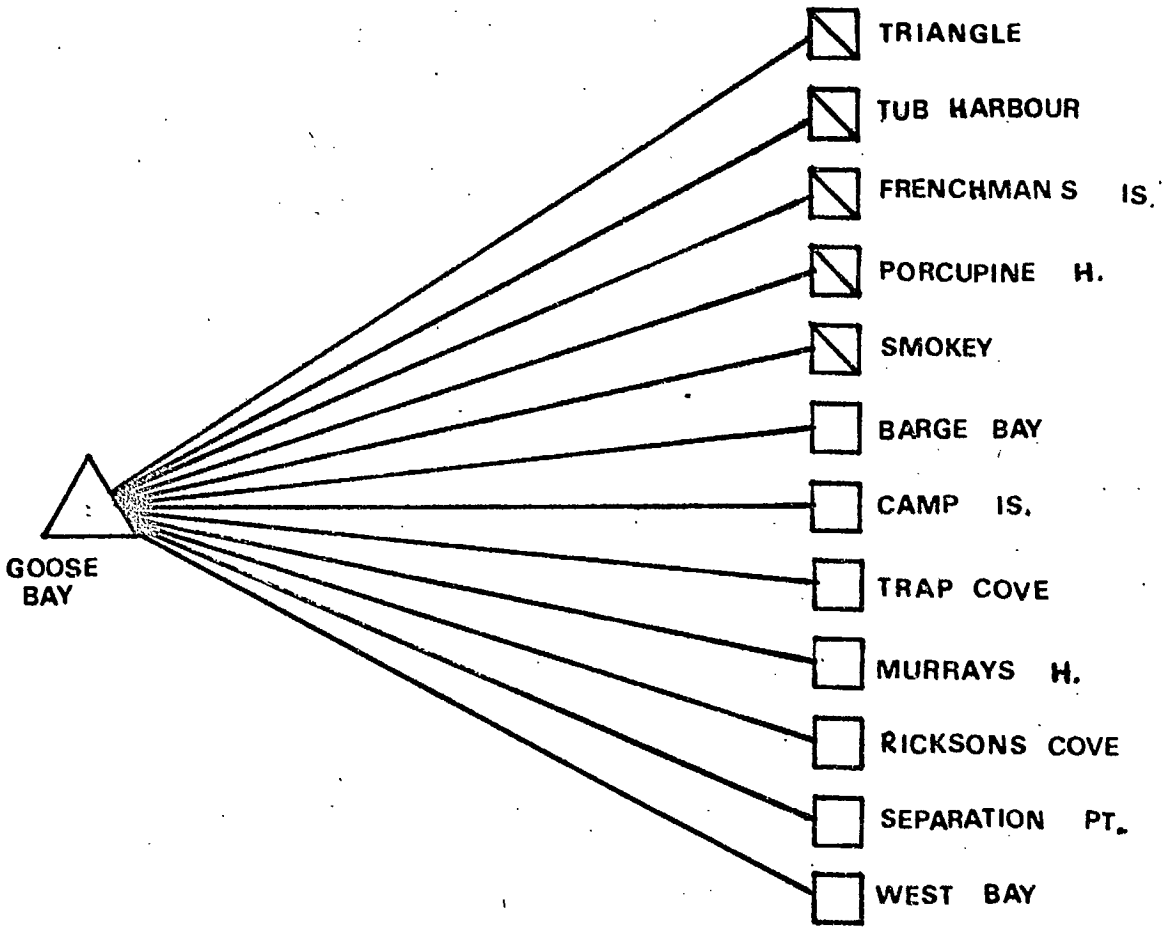
PROPOSED VHF NETWORK CONFIGURATION

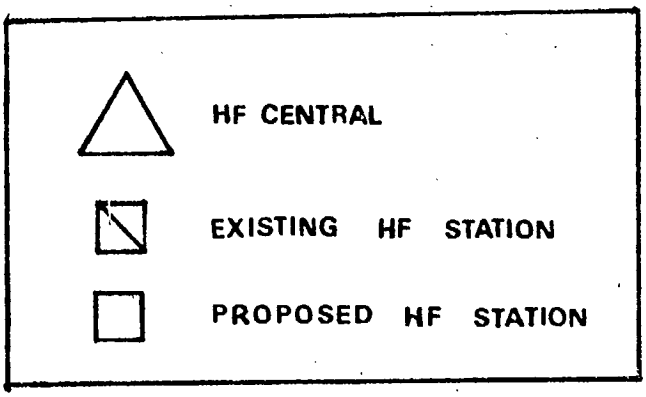






PROPOSED HF NETWORK CONFIGURATION





ATTACHMENT 14

SITE	TOWERS HEIGHT	TOWERS COST	ANT.+ CABLE	RADIO TEL.	RADIO T.V.	MUX	WLEL	TRANSPORTATION FROM GOOSE BAY	ELECTRICAL POWER	BUILDING	LAND GRADING	OTHER	TOTAL
NAIN	100'	35,000.	6,000.	41,000.		7,500.	15,900.	4,500.	50,000.	20,000.	25,000.	10,000.	214,900.
IGLOSIATII IS.	100'	35,000.	22,000.	72,000.				7,500.	50,000.	20,000.	50,000.	20,000.	276,500.
NUNAKSALUK IS.	100'	35,000.	28,000.	123,000.				9,800.	75,000.	20,000.	50,000.	20,000.	360,800.
DAVIS INLET			6,000.	41,000.		7,500.		4,000.	20,000.	20,000.	-	10,000.	108,500.
HOPEDALE	250'	51,500.	24,000.	82,000.		30,000.	19,200.	3,500.	50,000.	20,000.	25,000.	10,000.	315,200.
MAKKOVIK R.R.	250'	51,500.	28,000.	123,000.		7,500.		7,500.	75,000.	20,000.	50,000.	20,000.	382,500.
POSTVILLE			6,000.	41,000.		7,500.		3,000.	20,000.	20,000.	-	10,000.	107,500.
MAKKOVIK C.O.			6,000.	41,000.		7,500.		3,000.	20,000.	20,000.	-	10,000.	107,500.
												SUB. TOTAL.	1,873,400.
CARTWRIGHT	100'	35,000.	10,000.	41,000.	10,000.	25,000.	22,500.	3,000.	30,000.	20,000.	-	10,000.	206,500.
CAPE GREEP.	150'	40,500.	16,000.	72,000.	21,600.			7,500.	50,000.	20,000.	50,000.	20,000.	297,600.
BLACK TICKLE	150'	40,500.	13,000.	72,000.	21,600.	14,000.	11,300.	3,500.	75,000.	20,000.	25,000.	10,000.	305,900.
FRENCHMAN'S IS.	100'	35,000.	13,000.	72,000.	21,600.			4,000.	50,000.	20,000.	50,000.	20,000.	285,600.
GEORGE'S COVE	100'	35,000.	13,000.	72,000.	21,600.			7,500.	50,000.	20,000.	50,000.	20,000.	289,100.
FOX HARBOUR			6,000.	41,000.	9,000.	14,000.	12,600.	4,500.	30,000.	20,000.	25,000.	10,000.	172,100.
												SUB. TOTAL.	1,556,800.
												TOTAL	3,430,200.

Alternative Facility Plan

using Telesat Earth Stations

Nain

Davis Inlet

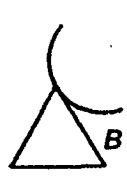
Makkovik

Postville

Rigolet

Goose Bay

Cartwright



Black Tickle

Thin route earth station–proposed (message only)

Existing TV receiving earth station to be upgraded to carry message also

Thin route earth station–proposed (message & TV)

Receive TV earth station

Attachment 16

EARTH STATION CONFIGURATION

Location	Proposed Transmission Capacity of the Earth Station	Telesat Annual Leasing Cost	Estimated Bell Canada Capital Expenditure
Davis Inlet	2 voice channels	$ 87,500	$ 40,000
Makkovik	2 voice channels	$ 87,500	$ 40,000
Postville	2 voice channels	$ 87,500	$ 40,000
Black Tickle	6 voice channels	$101,500	$ 80,000
Rigolet	2 voice channels	$ 87,500	$ 40,000
Nain	3 voice channels	$ 97,500	$ 50,000
Cartwright	TV receive channel	$ 80,000	-
Goose Bay	6 voice channels Existing TV receive channel	$ 60,000	$ 80,000
TOTAL	23 voice channels	$689,000	$370,000