THE UNIVERSITY OF MANITOBA

AN ANALYSIS OF THE RELATIONSHIP OF CANADA'S ARCTIC AIR FACILITIES POLICY TO THE COMMUNITIES OF THE KEEWATIN REGION IN THE NORTHWEST TERRITORIES

by

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ABSTRACT

The effects of transportation systems on community development is controversial and the use of transportation systems by governments is a sensitive area in public policy. This thesis examines the Arctic Air Facilities Policy of the federal government and analyses its relationship to the Keewatin Region of the Northwest Territories. Essentially the thesis tests the hypothesis that the Arctic Air Facilities Policy is beneficial to the communities of the Keewatin.

Air transportation has been a major element in life in the Canadian Arctic for many years and has been subject to a number of determinants - technological, commercial, military and industrial. Government involvement in the Arctic has shifted in the past few decades to a more interventionist stance towards comprehensive Arctic development. The evolution of governmental air transport policy and the nature of overall Arctic public policy was described to place the Arctic Air Facilities Policy in its proper context.

The social-economic milieu of the Keewatin was examined to identify its essential community characteristics. The importance of external forces to the development of the region was seen to be substantial and the strategic importance of air transportation with its year-round usefulness emerged. The difficulties of air transport operation in a northern region of this type were shown to be considerable. The communities of the Keewatin are populated by Inuit and white people. While the Inuit are relatively disadvantaged in the socio-economic sense their culture re-

mains a vital part of Keewatin life and their way of life has a long history of response to a variety of external impacts. The white population, although small in number dominates the highly skilled employment in the region and is characterized by short-term residency.

The relationship between the Arctic Air Facilities Policy and the communities in the Keewatin was viewed from a number of perspectives but emphasis was placed on the public interest in terms of the Keewatin communities. With regard to the effects that the Policy would have on the Keewatin a three-pronged evaluation was conducted. The Policy was evaluated in terms of its impact on air transportation performance, economic activity, and the quality of life in the Keewatin.

The analysis conducted revealed a wide range of results. The Policy provides the potential for significant improvement in the dependability, capacity and efficiency of the air transportation available in the Keewatin. However, the policies and practices of the air carriers in the region have often been determined independently of the Policy. Also, the situation of the third level air carriers operating in the Keewatin is critical in terms of competitive conditions and escalating operating costs.

With respect to direct economic effects the Policy is not likely to have a large quantitative impact on the region. However, the focus on training and local hiring appears to be well suited to the needs of the Keewatin. While the Policy is limited in terms of providing direct benefit in areas such as income generation and reduction in the cost of living it has additional implications for significant economic activity in the region such as pipeline construction or mineral development. With regard to the quality of life the Policy offers significant promise for the resi-

dents of the region. Improvements in medical care, the potential for increased participation in the education system are two obvious advantages. Furthermore the prospects for the future of the Keewatin would be enhanced through the potential that would exist for increased social, cultural and political contacts between the scattered communities in the Arctic. It is likely that the Arctic Air Facilities Policy will encourage the resolution of a land claim settlement between the federal government and the Inuit in the Keewatin. Besides quaranteeing the material needs of the white population the Policy would encourage more white people to consider long term residence in the region. A comparison of the probable community development effects of the Policy with those which could be expected to evolve in the absence of the Policy was overwhelmingly in favour of the application of the Policy.

In conclusion the hypothesis of the thesis was supported; the Arctic Air Facilities Policy appears on balance to be positive in its probable effects on the communities of the Keewatin. For best implementation it needs to be integrated with other public policies supportive of the Keewatin and the Arctic.

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CHAPTER I

INTRODUCTION

The relationship between transportation and development is fundamental in Canada's history. This relationship is especially vivid in the Canadian Arctic where transportation has always been an integral part of the way of life. During the past few decades, people in the Arctic have experienced a number of impacts and the federal government has responded with several policies aimed at controlling the development taking place. In 1974 the federal government instituted the Arctic Air Facilities Policy[1] to upgrade airport facilities in the Yukon and Northwest Territories. This policy, while directed primarily to guarantee each Arctic settlement containing at least one hundred residents, a year round, regular and reliable air service is also intended to achieve other objectives of a wide ranging nature. This thesis examines the relationship between the Arctic Air Facilities Policy and community development in the Keewatin Region of the Northwest Territories. Essentially the thesis examines the hypothesis that the Arctic Air Facilities Policy is beneficial to the communities of the Keewatin. The thesis will not only seek to determine fact but also will attempt to evaluate the benefits with consideration to their nature and direction and with sensitivity to the possibly conflicting value systems of the populations involved.

In areas such as the Canadian Arctic - lying north of the sixtieth

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[1]The Arctic Air Facilities Policy is described in Appendix A.

degree of latitude, terms such as transportation and development assume special dimensions. The chief constraint in the Arctic is the climate which has always exercised a major influence on northern life. The Arctic climate is characterized by long, cold winters and short, cool summers. As one proceeds north, the hours of daylight are reduced during the winter months and increased during the summer to the extent that beyond the Arctic Circle there is a period of continuous daylight and of continuous darkness near the two solstices.[2] Also the Arctic is far more vulnerable to atmospheric disturbances than southern areas.[3] Weather has always been one of the major factors hindering Arctic development and any plans for future development will require a detailed knowledge of its characteristics and its effect on man and his activities.[4]

In an ecological sense the Arctic environment is extremely fragile. The presence of permafrost has created a number of construction challenges which can only be overcome with a substantial increase in costs. In fact, the environment, especially in the Eastern Arctic, is a limiting one which permits little or nothing in the way of forestry or agricultural development.

In the Arctic, the majority of the people are of Indian, Metis and Inuit origin. Many of these people are deprived in an economic and social sense in comparison with the rest of the Canadian population. Issues such as the need to retain their identity through the maintenance and

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[2] F. Ken Hare, "The Atmospheric Environment of the Canadian North," in Arctic Alternatives, ed. Douglas H. Pimlott et al (Ottawa: Mail-O-Matic Printing, 1973), p. 253.

[3] Ibid.

[4] F.W. Benum, "Meteorological Services in the Arctic," in Arctic Transport: Proceedings of the Arctic Transportation Conference - Yellowknife, N.W.T. December 8 & 9, 1970, 3 vols. (Ottawa: Information Canada, February 1, 1971), 2:45.

strengthening of their cultures plus the desire of the native people to play a meaningful role in northern development have yet to be fully resolved. The white population in the Arctic provides much of the expertise essential to present economic development. The adjustment of both the native and white populations to current circumstances in the Arctic is an issue of major consequence.[5] The fact that the population is small and largely dispersed among a number of widely scattered settlements has presented a number of additional challenges to development along with those previously mentioned.

The problem of imbalances and distance in the Arctic accentuates the importance of transportation. The dependence of the area on the flow of goods and expertise from the south has been gradually increasing. This flow largely moves in one direction only, as there has not yet been a corresponding increase in the amount of goods being shipped from the north to the south. The resultant excess capacity, when combined with the lack of a substantial market and the natural constraints of the region, has helped to make Arctic transportation a very complicated concern. The dependence of the Arctic on transportation has increased demands for an improved transportation infrastructure in the Arctic. The pressure has been greatest for an upgrading of air transportation in the Arctic on account of the fact that this is the only mode which can guarantee a year-round, regular and reliable transportation service to a vast majority of the communities located in the region. The issue of improving transportation infrastructure is one that has critical significance for the future of the area and its people.

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[5] A.A. MacKinnon and Alfred H. Neufeld, Project Mental Health: A Study of Opinion North of 60°. (Saskatchewan: Marcotte Research Center, 1972), p. 1.

Increased transportation capacity may have widely divergent effects on development in a particular area. In the past, the most desired effect often revolved around the issue of economic development. Based on this objective, one could calculate the economic potential in terms of present value, of rather narrowly defined regions in order to put an upper bound on justifiable capital expenditures needed to realize the calculated potential.[6] Economic impacts such as employment creation, income generation and amelioration of the cost of living could provide the criteria needed to assess the worth of transportation investment in a particular area. More recently, transportation improvements have been cited as having important positive effects on political unity, social cohesion, and development, occupational specialization and human attitudes.[7] However, the extent and scope of external or developmental effects of transport have been increasingly questioned.[8] There is an increased awareness that, besides the possibility of waste inherent in transport projects, an improved transportation system might have adverse effects on overall development, especially in environmental terms, in a particular area. Also, transportation expenditure may be a necessary but not sufficient basis for development and may require supportive measures and policies. While there is much disagreement about the benefits that transportation can bring to an area, there seems to be a consensus that in developing regions or countries, transportation requires more precise and comprehensive analysis and planning effort.[9]

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[6] G. Wilson, "The Role of Transportation in Regional Economic Growth," in Transportation and Regional Development, eds. E.W. Trychniewicz and P. Tangri (Winnipeg: Center for Transportation Studies, University of Manitoba, 1970), p. 55.

[7] Ibid., p. 44.

[8] K.W. Studnicki - Gizbert, Transport Policy - Theory and Practice (n.p., 1975), p. 7.

[9] J. Heads, The Economic Basis for Transport Studies (n.p., 1975), pp. 40-41.

Transportation and Development in the Northern Regions of Circumpolar Countries

The important consideration in an analysis of the relationship between transportation and development seems to lie with the particular social, economic and political realities which exist in an area. It is widely acknowledged that the U.S.S.R. has the most extensive planning relative to northern development and transportation in the world. Vast improvements are being made in the road, rail, marine and air facilities in the north. It is the intention of the Russian government to utilize aircraft as the prime mover of commodities from the Arctic region into the central Siberian area, including the movement of ore and concentrates with aircraft such as the Antanov 22, a large turbo-freighter. The U.S.S.R. has a number of objectives for Siberia ranging from defence, resource exploitation and population settlement.[10] One objective of their national policy is to attempt to move people across the Urals into Siberia. By the year 2000, forty per cent of the population is to be shifted east of the Urals.[11]

In so far as the Fennoscandanavian countries are concerned, there has been a wide range of achievement with respect to transportation and development. In Norway, the transport network is well developed on a north-south basis with superior air services and facilities.[12] Rail, marine and certain highway movements are subsidized to support commodities in the export market or to equalize transportation costs throughout the

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[10] Arthur V. Mauro, "Transportation and Northern Development," (Winnipeg: Northern Transportation Commission, 1971), p. 13.

[11] Ibid., p. 12.

[12] Ibid., p. 7.

country.[13] This transport infrastructure has helped to make possible a situation where the northern population has remained relatively stable for many years.

In Finland, the entire country lies beyond the 60th degree of latitude. The transportation system is well developed, especially the rail and road networks. However, from the south of the country northwards, the pre-conditions for economic activity in general deteriorate.[14] Northern Finland has been overpopulated for its level of economic development.[15] The development of Northern Finland revolves around the question of whether or not the government will support increased economic expansion in the area. The transportation system in Northern Sweden is also well developed especially in regard to rail, road and marine facilities. However, like the situation in Finland, there is a need for policy formulation with regard to northern development. In the absence of this direction, the situation in Northern Sweden can be characterized as one of "encouraged depopulation."[16]

In Greenland, both marine and air transportation services are operated at a considerable deficit which is increasing annually.[17] The

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[13] Ibid., p. 5

[14] Marui Polomaki, "The Development of Economy and Population in Subarctic Finland Since World War!!," in Developing the Subarctic, ed. John Rogge, (Winnipeg: Department of Geography, The University of Manitoba, 1973), p. 35.

[15] Reyo Helle, "The Correlation Between Service Facilities and Population Growth in a Sparsely Settled Region," in Developing the Subarctic, ed. Rogge, p. 125.

[16] Peter Laut, "Agricultural Research in the Northern Margins of the Ecumem," in Developing the Subarctic, ed. Rogge, p. 66.

[17] Department of the Secretary of State, Translation Bureau, Briefing to the Minister of Greenland, from the Greenland Council, 1976.

transportation system is faced with an immense problem trying to supply essential services to a number of small, widely dispersed communities. To alleviate this difficulty, the government is planning on replacing expensive helicopter operations with the more economical Dash 7 aircraft. The overall objective is the concentration of population in the larger centres.

In Alaska, air transportation is highly developed and perhaps taken for granted in their way of life in much the same fashion as public utilities such as telephone and sewage service.[18] There are about fifteen hundred airfields used on a regular basis throughout the state. Helicopters are widely used especially for resource exploration and development work. Alaska has adopted a system for priorizing the selection of airport projects to be provided by the state. The system involves a number of variables which are then weighted for each community being evaluated - communities having a population of seven hundred and fifty people or more are not included because these particular places already have adequate airport facilities. The criteria for weighing the variables is based on the level of dependence on air transportation shown by the particular community. The variables include the following: population, alternative-year round methods of transportation, distance to the nearest trunk airport, industry in the community, school attendance, class of post office, status of the community, air carrier service, a tie variable, and a percentage change in population over the past decade. These ten variables form the basis for a ranking of communities on the basis of

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[18] James Moody, Chief Planning Engineer, Department of Public Works, State of Alaska, 6 January, 1977, personal letter.

expressed dependency on air transportation.[19] The following quotation explains the objective:

> It is felt that with such a priority system established, it will be more possible to plan for balanced economic development throughout the state. The construction and improvement of secondary airports in remote areas will have the immediate effect of providing adequate emergency and dependable transportation for all peoples of the state. This will in turn stimulate the local economy by making feasible input and output of goods and services, thereby integrating otherwise subsistence economies into the more potentially productive state economy.[20]

In Canada, geography dictated from the beginning that transportation was to be a vital concern. The Canadian Pacific Railway was built, along with other railroads, in the first part of the 20th century to fulfill Canada's promise as a political, economic and social union. In so far as the regional problem - that is the relative economic health of the different regions of the country - was regarded as a factor of distance, transportation and transportation rates both become a cause of and a cure for regional weaknesses.[21] In the Arctic, the vastness of the land combined with a harsh unpredictable climate has made transportation an important if hazardous operation. This was reflected in the early history of the Inuit when mobility really meant the difference between life and death. In the 20th century, the saga of the bush pilot helped to romanticize a vital component of Arctic life. The installation of airport facilities for defence purposes during and after World War II provided the essential boost that air transportation needed in the Arctic. Besides

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[19] State of Alaska, Department of Public Works: Division of Aviation, Alaskan Community Ranking for the Development of an Air Transportation System, November 1974 ed., with an Introduction to the 1971 ed. (n.p. 1974), p. 2.

[20] Ibid., p. 2.

[21] Howard J. Darling, An Historical Review of Direct Transport Subsidies in Canada (n.p., 1975), p. 10.

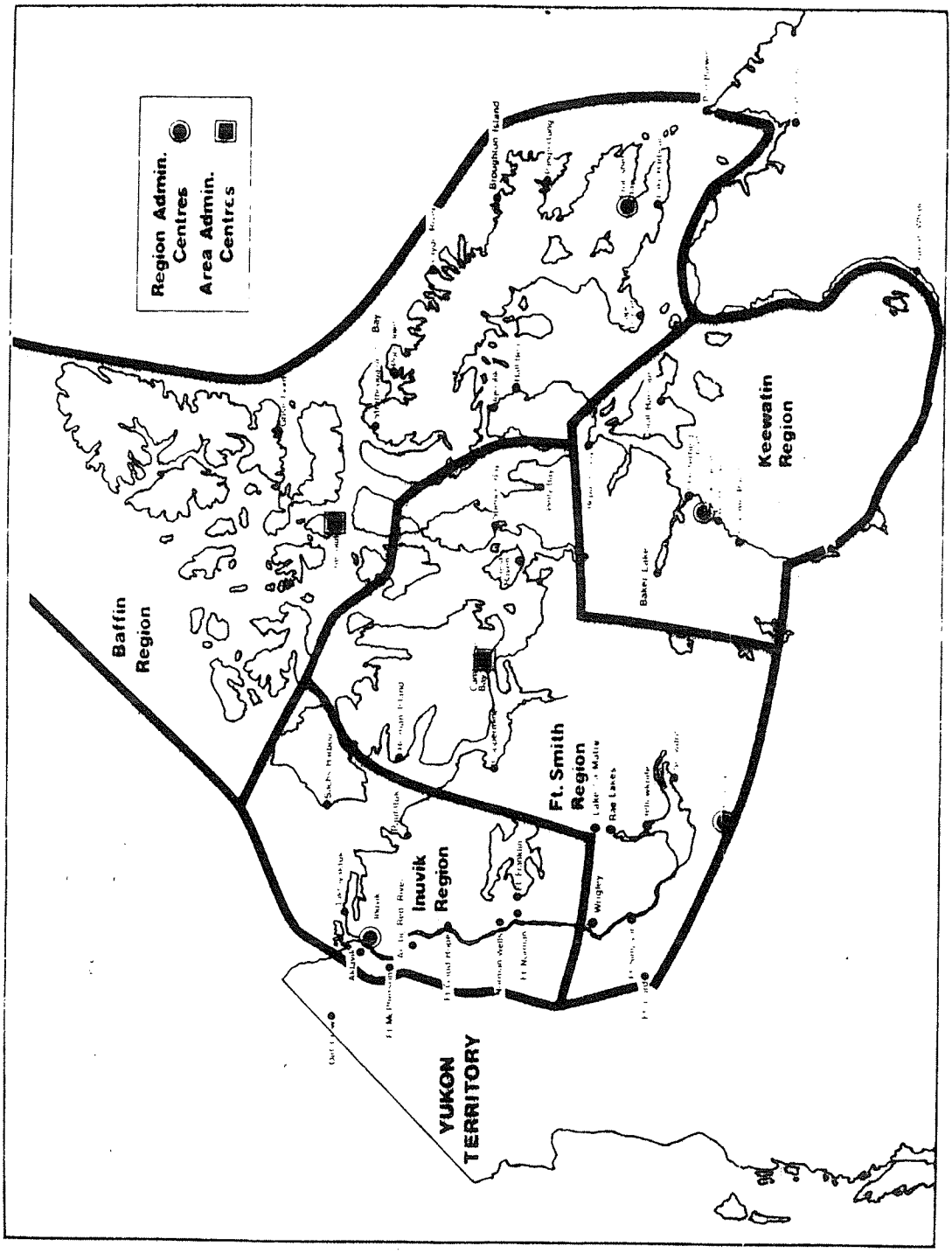

Fig. 1 NORTHWEST TERRITORIES ADMINISTRATIVE REGIONS

allowing for intensive resource exploration and development work, air transportation began to play an important role in northern life styles.

The Keewatin Region

The area under study in this thesis is the Keewatin Region in the eastern part of the Northwest Territories. This term normally refers to one of the four political divisions of the Northwest Territories; however for our purposes, the term Keewatin Region is outlined in Figure 1 on the previous page. In this study, the names Keewatin and Keewatin Region will be used synonymously. In comparison with the other regions of the Northwest Territories, the Keewatin while a distinct region, faces similar problems; for example, extreme climate and scattered population have also worked to the detriment of transportation and development in the area. The proximity of Hudson Bay has had a major impact on both development and transportation in the Keewatin. All of the settlements in the region are located on Hudson Bay with the exception of Baker Lake which is connected to it by the Chesterfield Inlet as outlined in Figure 2. The access to water allows marine resupply to take place from Churchill, Manitoba for about three months of the year. The Hudson Bay has had on occasion, an adverse impact on the weather thus disrupting transport navigation in the area.

The Keewatin is somewhat isolated. One reflection of this is the fact that the area has not yet been exposed to significant resource extraction. The population of the area is relatively homogeneous in that over 80% of the population in the settlements of the Keewatin are of Inuit extraction (See Table 1). The population of the region is almost totally contained in eight settlements, namely Baker Lake, Chesterfield Inlet,

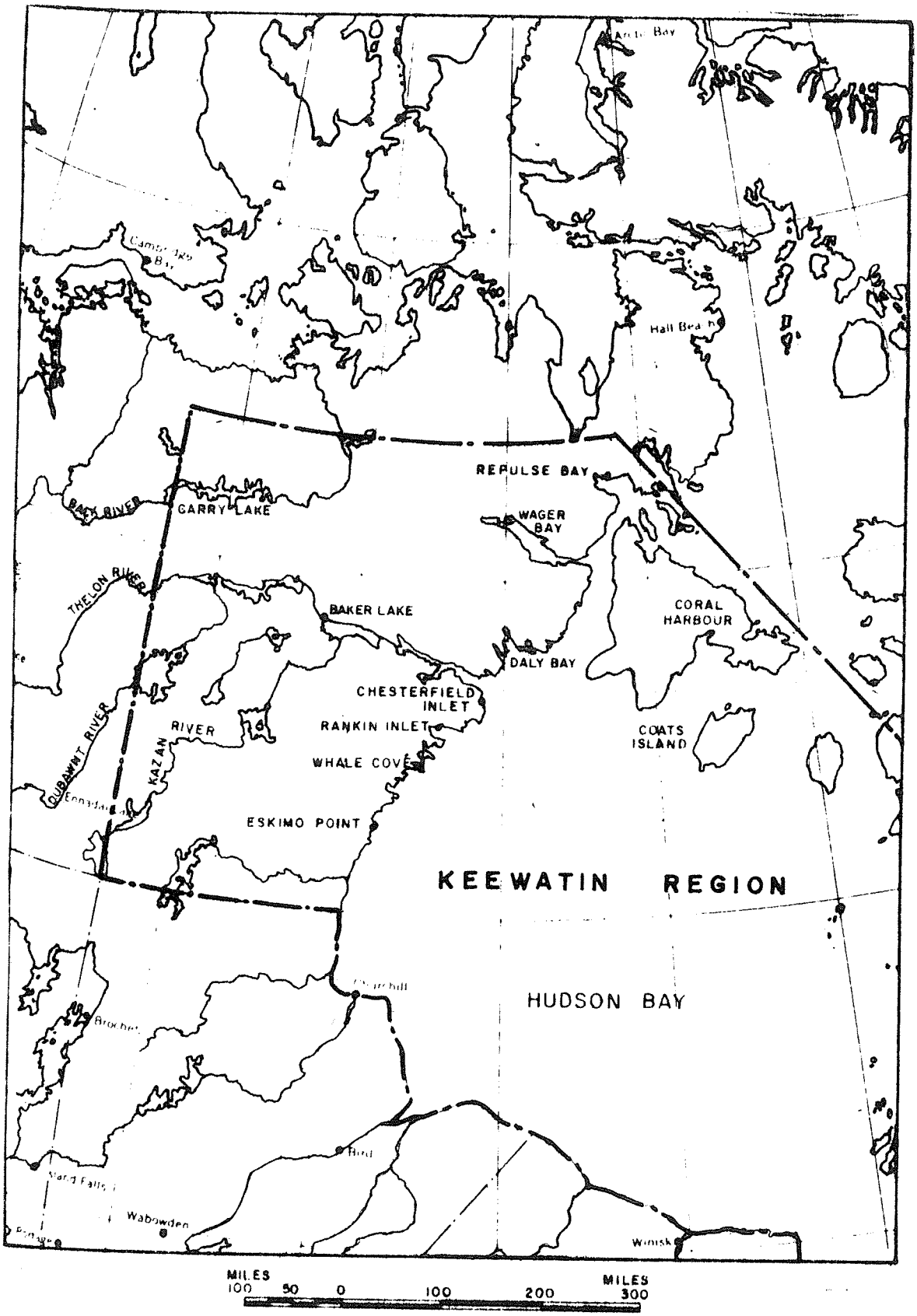

Fig. 2 MAP OF KEEWATIN

TABLE I

Comparison of Population Change by Keewatin Settlement

	1966A			1971A			1976B				1981C
	Total Population	% Change from 1961	% non native	Total Population	% Change from 1966	% non native	Total Population	% Change from 1961	% Change from 1971	% non native	Projection
Baker Lake	596	+14.6	12.5	756	+27	12.0	900	+73.0	+19.0	15.0	1100
Chesterfield Inlet	199	+36.0	n/a	258	+30	10.5	280	+91.7	+ 8.5	6.1	330
Coral Harbour	298	+24.2	n/a	355	+19	7.0	425	+77.0	+20.0	12.3	510
Eskimo Point	464	+176.2	9.2	598	+29	10.0	875	+420.0	+46.0	4.9	1200
Rankin Inlet	429	-26.7	19.1	566	+32	14.5	840	+43.5	+48.0	18.5	1175
Whale Cove	181	+44.8	13.3	213	+18	10.0	171	+36.8	-20.0	22.8	165

Source: A. Census of Canada
NWT, Unincorporated Places
1971 Census

B. Canada North Almanac
Research Institute of Northern Canada, 1976
Based on TERIS Survey

C. Population Projection Calculated from average annual growth rate 1966-1976.

Coral Harbour, Eskimo Point, Rankin Inlet, Whale Cove, Repulse Bay and Sanikiluaq. This thesis will be concerned with the first six of these communities. The explanation for the omission of Repulse Bay and Sanikiluaq lies in the fact that both are located a considerable distance from the rest of the Keewatin and are thus isolated from them. In an economic sense, the six communities have a great deal in common. To an overwhelming degree, the economic livelihood of the communities revolves in a direct and indirect fashion around government expenditure. The best available illustration of this fact is a breakdown on the type of employment available in the various settlements of the Keewatin.[22] While a number of cottage industries, private business concerns, co-operatives, fishing enterprises do operate, few could do so without direct government assistance. The Keewatin region is future-orientated in the sense that many local residents are anticipating a time of unprecedented prosperity. Some of the people point to the prospect of the Polar Gas Pipeline being constructed through the western part of the region.[23] Others stress the tremendous mineral potential lying in the interior of the Keewatin Region.[24] One cause for optimism, especially with young Inuit Leaders, is the prospect of a Native Land Claims Settlement.[25] These people point with enthusiasm to the huge quantities of gas discovered in the High Arctic Islands reflecting in turn on the gas shortages in the United States. The fact that the Federal

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[22] See Table II in Appendix B.

[23] Rankin Inlet Times, 17 November 1975, p. 1.

[24] W.W. Shilts, Geologist for the Keewatin Geological Survey of Canada, personal letter.

[25] Northwest Territories, Legislative Assembly, Legislative Assembly Debates, 59th Session, 8th Assembly, 28 May, 1976, p. 532.

Government has agreed that a land claim settlement will be made[26] with the Inuit has encouraged many of the Inuit. The precedent set in Alaska, where a large financial settlement was made with the native people prior to the development of the oil resources in the state, is the basis for further enthusiasm.

The Keewatin Region has a number of problems and prospects which are quite unique to the area, yet the Region is, nevertheless, illustrative of Arctic realities. These facts plus the author's opportunity to spend time in the area explain the choice of the Keewatin communities as the basis for this thesis.

The Arctic Air Facilities Policy

This policy[27] prescribes a system for classifying Arctic airports according to their community needs. Classification levels of A, B and C are based on the population and anticipated economic potential of the affected community, plus the present structure of air service being provided and the availability of other means of transport to the area. For each classification level, a detailed package of airport facilities is described which can be further refined to suit the special needs of a particular site. The development of the Arctic Air Facilities Policy was in direct response to the need expressed for an upgrading of the level of Arctic air transportation by residents of the north, air carriers and users of the air transport system.

The Arctic Air Facilities Policy is very significant for a number

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[26] Nunavut: A Proposal for the Settlement of Inuit Lands in the Northwest Territories (n.p., 27 February, 1976).

[27] See Appendix A.

of reasons. The Policy represents the largest single investment of funding ever made in the Northern Territories.[28] It is especially significant that major funding has been provided for the installation of air transport infrastructure to realize government objectives in the Arctic. In fact, the policy describes a major committment of Transport Canada funding and energies to provide a transportation infrastructure which will be superior to that which exists in many other parts of Canada. The Arctic Air Facilities Policy provides a necessary basis for further government efforts to ensure "a regular and reliable air service" to communities in the Northern Territories. Finally while the policy represents an approach to the realization of federal government objectives for the Northern Territories, the Arctic Air Facilities Policy has obvious applicability to other remote regions of Canada.

The thesis is organized in the following way: The first chapter outlines the essentials of the issue namely: an overview of the relationship between transportation and development; introduction to the region being studied plus a brief description of the Policy itself; and finally a rationale for the thesis itself. Chapter II will provide a perspective for the Policy by describing its evolution. Chapter III will detail the socio-economic situation as it presently exists within the six communities of the Keewatin Region. Chapter IV will discuss the relationship between the Arctic Air Facilities Policy and community life. Chapter V will evaluate the Policy in terms of air transportation performance. Chapter VI will evaluate it with regard to its economic impact on the Keewatin while Chapter VII will analyze it in terms of its impact on the 'quality of life' in the region. Chapter VIII presents an analysis of developmental alter-

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[28] G. Elliott, Transport Canada, personal letter.

natives to meet the needs of the communities of the Keewatin. Finally Chapter IX will give a concluding assessment of the Policy and its applicability to remote areas like the Keewatin.

CHAPTER II

THE EVOLUTION OF THE ARCTIC AIR FACILITIES POLICY

Air transportation in the Arctic reflects a number of determinants in its development. Also the Arctic Air Facilities Policy is a relatively new type of ingredient in Arctic development. A concise historical account of these relationships will be presented in this chapter. In this way the Arctic Air Facilities Policy may be seen in proper perspective.

The Arctic and Transportation Development[29]

The Arctic Air Facilities Policy was instituted in response to criticism of an air transportation system that had evolved by the 1970's into a major force in the development of the Northwest Territories and the Yukon. The growth in Arctic air transportation, especially in the Western Arctic, was due to several influences. A number of technological advances allowed air transportation to overcome some of the natural constraints of the Arctic. Resource exploration and development had provided an important impetus to the expansion of Arctic air transport. Defence considerations had resulted in the construction of a sizable part of the air transport infrastructure presently in existence in the Arctic. Commercial aviation had long played a significant role in opening up the

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[29] See Appendix C for Chronology of Transportation Development in the Arctic.

Arctic. Finally the Federal Government especially, in the last few decades, had developed into the key influence behind the air transportation system as it presently exists in the Arctic.

Techonological innovation has accomplished a great deal in overcoming constraints such as the climate, distance, inaccessibility, rough terrain and the sparseness of settlement which have always been key considerations in the Arctic. The fact that in the 1920's airplanes could be equipped with floats and skis made the Arctic accessible during both the summer and winter months.[30] The use of heavy piston-engined freighters after the Second World War with large carrying capacity, increased range and four-engined power increased the potential of Arctic air transport to carry more people and freight on longer journeys with greater safety than had ever been possible in the past. The introduction of turboprops and jets in the late 1960's and 70's has further increased the advantages of the heavy piston-engined freighter with the additional benefit that these types of airplanes do not have the trouble starting in inclement weather that earlier types sometimes faced. The De Havilland Twin Otter with its ruggedness and STOL (Short Take-off and Landing) capabilities has seen a great deal of service in the Arctic.

In an area like the Arctic the development of navigation and approach aids is critical for air transport safety. The availability of private, portable approach and navigation aids during the 1970's increased the safety factor. Also the introduction of the Global Navigation System has allowed aircraft to fly longer routes with reliable accuracy. In the

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[30] Joe L. Courtney, Northern Air Transportation Study, 2 vols. (Ottawa: Government of Canada, May 1971), vol. 2: System Analysis, p. 14.

near future a number of possibilities exist. The Omega Navigation System will provide a navigation system with increased accuracy and lower costs. Aircraft with longer ranges, greater carrying capacity and STOL characteristics seem likely in the next several years.

Resource exploration and development was an important element in the early development of Arctic air transport and has again become significant during the last several years as a major reason for the use of air transportation. In 1921 Imperial Oil used the first airplanes in the Arctic when it commissioned two Junkers aircraft to explore for oil in the Western Arctic.[31] Further explorations for oil and minerals financed the beginnings of a rudimentary air transportation capability in the Arctic. One of the facets of this capability was the creation of a new breed of pioneer, the "bush pilot" who later played a critical role in the provision of services such as mail to northern residents and was instrumental in the growth of commercial aviation in the north. Resource companies stepped up their use of air transportation in the Arctic during the late 1960's in their search for minerals and fossil fuels. Many of these companies have purchased or leased their own aircraft to the detriment of the commercial air carriers operating in the Arctic. However, despite this, the resource companies have provided a major impetus to the economy of the north and have contributed to the demand for an expanded transportation infrastructure in the Arctic.

In the past, military considerations have had an important influence on the establishment of air transportation facilities in the Arctic.

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[31] Lawrence F. Jones, George Lonn and Specialists of the North, Pathfinders of the North, (Toronto: Pitt Publishing Co. Ltd., 1970), p. 139.

The construction of airports in northern Canada to form staging routes during the Second World War provided the potential for year round air transportation into many settlements. Airport installations built at Churchill, Coral Harbour, Fort Chimo and Frobisher Bay were later to become the focal points of air transportation development in the Eastern Arctic.[32] In the 1950's the frontiers of air transport were rolled back further when a number of Arctic airstrips were constructed for the Distant Early Warning defence installation.[33] This project served as a catalyst for Canadian aviation as two-thirds of the total air freight tonnage was transported by Canadian commercial aviation.[34] The role of the military in the development of transportation infrastructure for the Arctic has undergone a significant decline as military elements in public policy generally have been minimized.

Commercial aviation began in the Arctic in 1924 and by 1929 was firmly established in the north.[35] By the 1950's three air routes into the north had been developed in a north-south direction, following the natural lines of supply from Southern manufacturing or population centres to distribution centres in the north.[36] Each of the following cities

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[32]Courtney, System Analysis, p. 15.

[33]Jones, Lonn and Specialists of the North, Pathfinders of the North, p. 149.

[34]Courtney, System Analysis, p. 15.

[35]Frank H. Ellis, "Commercial Flying Hits Its Stride, 1924-1929," in Canada's Flying Heritage, (Canada: University of Toronto Press, 1954), p. 235.

[36]K. P. Peiffer, "Air Transport in Northern Canada," in Arctic Transport: Proceedings of the Arctic Transportation Conference - Yellowknife, N.W.T. December 8 & 9, 1970, 3:286.

were established as route supply points: Montreal served Fort Chimo, Frobisher Bay and Resolute Bay; Edmonton served Yellowknife, Inuvik and Cambridge Bay; while Winnipeg served Churchill and the communities of the Keewatin. All three routes developed to the point where they are an integral and important part of life in the north and are essential to Northern development.[37] Each one of the routes is served by a regional air carrier plus a number of smaller operations. Each of the regional air carriers, namely Pacific Western Airlines, Nordair and Transair, grew from a charter operation into a substantial regional airline. However by the end of the 1960's their operations into the Arctic were restricted by the lack of airport facilities located in the region.

Government Intervention in the Arctic

Government intervention on a substantial scale is a recent phenomenom in the Arctic. This new policy was reflected in a speech made in 1972, by Jean Chretien, then Minister of Indian Affairs and Northern Development. In his speech Mr. Chretien discussed some of the changes that have taken place in federal government objectives for the Arctic.

> During the past two decades the emphasis has moved from defence to people programs, to resource development to ecological problems. Today there is a new requirement for shifting emphasis toward people programs but by a smooth adjustment of all programs rather than an abrupt change from one set (say resource-orientated to another).

While certain objectives such as the protection of Canada's sovereignty and northern economic development will always be important, the issue of government priorities among its numerous objectives for an area such as the Arctic is critical. The amount of funding, the emphasis given a cer-

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[37] Ibid., p. 290.

tain government department or policy, and the manner in which a certain program is to be implemented are all directly related to the priorities which the government has established for the area. With regard to the Arctic, the role of the federal government has grown from one of minimal involvement to that of policy implementation aimed at basic alterations in the way of life in the region. This changing role is clearly reflected in the field of air transportation where the role of the federal government has evolved from that of a limited input, to one, whereby the government instituted the Arctic Air Facilities Policy which is expected to have a major impact on life in the Arctic.

Besides the installation of military facilities and weather stations in the Arctic, the federal government did not participate in Arctic air transportation in a significant way until the early 1960's. Until this time, funding for needed air transport infrastructure such as runways, navigation and approach aids competed with similar demands from other parts of Canada with the result that little attention was paid to the provision of air transport facilities in the Arctic. This attitude started to change when a number of resource companies started to make use of air transportation for exploratory work in the 1960's. Also, by this time the federal government was involved in a number of social service programs in the settlements of the Arctic.

In an attempt to define air transportation needs for the Arctic a survey was done in 1966 of air transport in the region. By this time the Department of Northern Affairs and Natural Resources and the Department of Transport established some basic policies to upgrade the level of air transport facilities located in a number of Arctic settlements.[38] There was an increased federal readiness, particularly during the 1960's,

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[38]Elliott, personal letter.

to invest in northern transportation facilities as a means of encouraging economic development in general and resource development in particular.[39] In a statement of policy concerning regional air carriers, the Department of Transport established a framework to allow the three regional air carriers to push forward with purchases of new equipment and with an expansion of their services.[40] Also this position was reaffirmed when the Air Transport Committee of the Canadian Transport Commission emphasized the benefits of scheduled air services and contrasted them with charter operations by suggesting that departments and agencies of government should wherever possible use regular air services in the north.[41] However, at this stage the air carriers continued to be limited by both underused airplane capacities plus severe restrictions on expansion due to the inadequacy of Arctic airport facilities. Furthermore the National Transportation Act and its emphasis on "efficiency" and "competitiveness" on the country's system of transportation seemed to disregard areas such as the Arctic with its underdeveloped transportation facilities and services.[42]

Finally in 1970 a special policy was set up to build airstrips at ten Arctic locations. This Remote Airports Policy provided for the participation of the Department of Indian Affairs and Northern Development, the Department of National Defence and the Department of Transport. The com-

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[39] K. Wyman, "Transportation Facility Costs and User Charges", in Arctic Transport: Proceedings of the Arctic Transportation Conference - Yellowknife, N.W.T. December 8 & 9, 1970, 3:102.

[40] Robert P. Engle, "Air Transport and Northern Development", in Arctic Transport: Proceedings of the Arctic Transportation Conference - Yellowknife, N.W.T. December 8 & 9, 1970, 3:333.

[41] Peiffer, "Air Transport in Northern Canada", p. 292.

[42] Canada, Department of Transport, Statement on Transportation Policy, by the Hon. Jean Marchand, (Ottawa: Transport Canada, June 1975), p. 6.

munities affected were Eskimo Point, Pangnirtung, Fort McPherson, Aklavik, Chesterfield Inlet, Pond Inlet, Whale Cove, Old Crow, Igloolik and Cape Dorset. The stated objectives for the policy were to improve health, justice and education facilities, to encourage the establishment of regular air services and, finally, to equalize opportunity and cost of living between the north and the south.[43] However the Remote Airports Policy came under a great deal of criticism during its existence. The program only provided for airstrips thus ignoring the need for improved passenger, navigation, communication or meteorological aids essential to air transport in the Arctic.[44] Also, the Department of National Defense as part of its general withdrawal from direct participation in the operation of Arctic airports gradually reduced its commitment to the policy. Another policy in operation at this time provided assistance to resource companies building airstrips in the Arctic as part of their exploration and development work. However both this program, the Remote Airports Program, and expenditures from the Canadian Air Transportation Administration itself were criticized as being inadequate to meet the need for a safe, reliable air transportation system in the Arctic.

In 1970 a conference of considerable significance for Arctic transportation was held in Yellowknife, Northwest Territories. The Arctic Transportation Conference attracted over two hundred and fifty individuals both knowledgeable and concerned about the issue of transportation in the Arctic.[45]

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[43] Elliott, personal letter.

[44] Ibid.

[45] "Appendix B," in Arctic Transport: Proceedings of the Arctic Transportation Conference - Yellowknife, N.W.T. December 8 & 9, 1970, 3:338 - 347.

Through the conference proceedings a number of salient points were made. It was emphasized that the north was at a critical stage in its development because irreversible decisions would soon be required which would relate to the kind of development Canadians and northern residents wanted for the Arctic.[46] Also on a number of occasions it was affirmed that the Arctic was a part of the country with unique problems on account of its climate, topography and socio-economic development. Furthermore, it was suggested that one reflection of this uniqueness was the significance of air transportation to the Arctic[47] in that it was the only form of transportation which could guarantee year-round provision of essential services such as medical care and education to isolated settlements, in addition to year-round operation of resource exploration and development. However, it was stated that the establishment of an 'adequate' system of air transportation in the Arctic would require a heavy expenditure of public funds especially in relation to the region's small population.[48] Additionally the point was made that aid given in the form of an upgraded transportation system might not be the best way of raising the living standards of that part of the Northern population which was most in need.[49]

In the Conference's closing address, the then Minister of Transport, Don Jamieson underlined certain policy positions. He suggested that the

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[46] Peiffer, "Air Transport in Northern Canada," p. 299.

[47] Arctic Transport: Proceedings of the Arctic Transportation Conference - Yellowknife, N.W.T. December 8 & 9, 1970, with an Opening Address by The Hon. Jean Chretien, 1:5.

[48] Ibid., p. 12.

[49] Arctic Transport: Proceedings of the Arctic Transportation Conference - Yellowknife, N.W.T. December 8 & 9, 1970, with closing address by The Hon. Don Jamieson, 1:307.

government had the responsibility to provide transportation facilities "so that enterprisers of one kind or another can move in and spend their own dollars". Mr. Jamieson said that the government would base its decision on whether or not to locate transportation infrastructure in a particular area on the "ultimate returns" which the facilities would provide.

The Arctic Transportation Conference had a number of profound effects on development in the Arctic. Most significantly the Conference led to the establishment of the Arctic Transportation Agency and the Arctic Air Facilities Policy which seemed to confirm the important role that air transportation was expected to play in future Arctic development. Until a special programme for the Arctic could be organized the federal government authorized financial assistance for Arctic airports on an interim basis for the years 1972/73 and 1973/74.

The Arctic Development Policy

In 1971 the federal government approved an Arctic development policy which established seven National Objectives for Northern Canada. The following is a list of the objectives along with a brief description of each one.[50]

1. Quality of Life - To provide for a higher standard of living, quality of life and equality of opportunity for northern residents by methods which are compatible with their own preferences and aspirations.

2. Economic Growth - To encourage viable economic development within the regions of the northern territories so as to realize their potential contribution to the national economy and the material well being of Canadians.

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[50]Canada Department of Indian and Northern Affairs, Advisory Committee on Northern Development North of 60° "Allocations by Northern Objective" in Annual Northern Expenditure Plan 1976-1977, (Ottawa: Minister of Supply and Services Canada, 1976), p. 16.

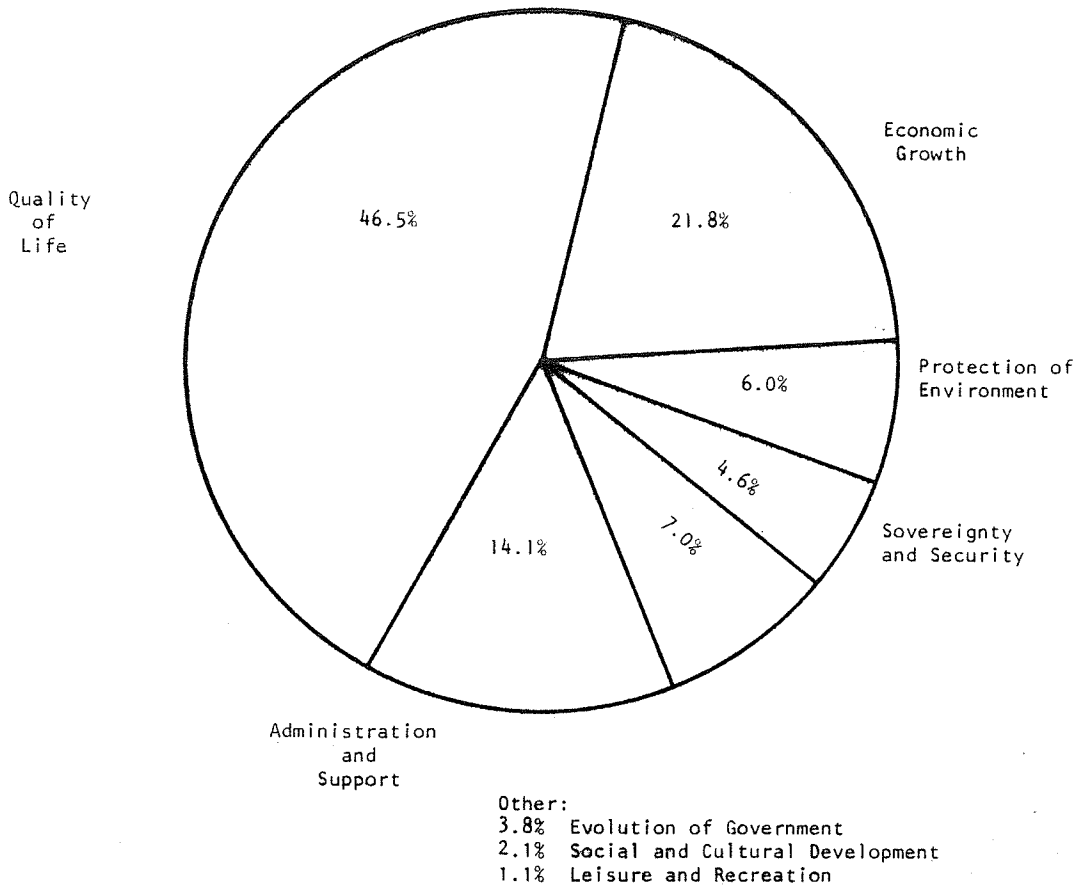

Fig. 3 DISTRIBUTION OF 1976/77 PLANNED EXPENDITURE BY NORTHERN OBJECTIVE

Source: Annual Northern Expenditure Plan 1976/77
Advisory Committee Northern Development North of 60°

3. Sovereignty and Security - To maintain Canadian sovereignty and security in the north.

4. Protection of Environment - To maintain and enhance the northern environment with due consideration to economic and social development.

5. Evolution of Government - To further the evolution of self-government in the northern territories.

6. Social and Cultural Development - To realize the potential contribution of the northern territories to the social and cultural development of Canada.

7. Leisure and Recreation - To develop fully the leisure and recreational opportunities in the northern territories.

Prior to the articulation of these objectives, development often was not considered in terms of its ultimate impact on the land and people of the Arctic. Also a clear rationale did not exist for increasing government involvement in the Arctic beyond the view that development had to be controlled. In light of the increased development activity of the 1960's and 1970's in the northern territories, the seven National Objectives for Northern Canada were worked out to guide development in the Arctic and provide a policy framework for the organization of government programs for the decade of the 1970's. In this way the diverse interests involved in the development in the Arctic - as represented at the Arctic Transportation Conference - would have a common basis on which to formulate their plans. In 1972, the then Minister of Indian Affairs and Northern Development, Jean Chretien, while defending the seven objectives said that the government was affirming that the needs of the people in the Arctic were more important than resource development and that the maintenance of ecological balance was essential.[51] This view is reflected in Figure 3 on

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[51] Canada, Department of Indian Affairs and Northern Development, Report to the Standing Committee on Indian Affairs and Northern Development: The Government's Northern Objectives, Priorities and Strategies for the 70's by The Hon. Jean Chretien, (Ottawa: n.p. 1973).

TABLE 2

Distribution of Planned Expenditure by Spending Agency and Northern Objective for 1976/77 ($000's)

Spending Agencies	Evolution of Government	Quality of Life	Social and Cultural Development	Economic Growth	Sovereignty and Security	Protection of Environment	Leisure and Recreation	Administration and Support	Total
Federal Agencies:									
Canadian Broadcasting Corporation	467	3,266	5,134	-	-	467	-	-	9,334
Central Mortgage and Housing	-	8,415	-	-	-	-	-	-	8,415
Communications	-	699	-	344	-	-	-	-	1,043
Energy, Mines and Resources	-	7	32	5,416	954	1,619	67	370	8,465
Environment	-	374	-	5,537	1,385	6,012	281	-	13,589
Finance	-	-	-	-	-	-	-	-	-
Indian and Northern Affairs	2,536	16,157	4,926	31,606	202	23,781	2,287	8,925	90,420
Justice	-	472	-	-	-	-	-	-	472
Labour	-	-	-	-	-	-	-	248	248
Manpower and Immigration	-	1,327	-	4,923	-	-	-	-	6,250
National Defence	-	568	-	-	17,949	-	-	-	18,517
National Health and Welfare	-	40,517	70	-	-	-	40	-	40,627
National Museums	-	-	100	-	-	-	-	-	100
National Revenue	-	-	-	-	365	-	-	-	365
Post Office	-	2,505	-	2,504	-	-	-	-	5,009
Public Service Commission	-	1,089	-	-	-	-	-	-	1,089
Public Works	-	1,200	-	3,958	-	-	400	14,274	19,832
Royal Canadian Mounted Police	-	6,117	-	-	6,116	-	-	-	12,233
Secretary of State	34	170	102	-	-	-	34	-	340
Transport	-	16,427	-	38,331	-	-	-	536	55,294
Unemployment Insurance Commission	-	10,037	-	-	-	-	-	-	10,037
Sub-Total	3,037	109,347	10,364	92,619	26,971	31,879	3,109	24,353	301,679
Government of the Northwest Territories	7,306	131,328	1,373	20,984	-	2,069	2,926	50,113	216,099
Government of the Yukon Territory	11,987	30,522	223	13,842	-	754	701	7,616	65,645
Total	22,330	271,197	11,960	127,445	26,971	34,702	6,736	82,082	583,423

Source: Annual Northern Expenditure Plan 1976/77
Advisory Committee North Development, North of 60°

Page 27 which illustrates the relative importance of the various objectives in the 1976/77 Planned Expenditures for the northern territories by the federal and territorial governments. A breakdown of how each objective will be implemented during the 1976/77 fiscal year is revealed by Table 2 on Page 29.

Since the National Objectives for Northern Canada were first implemented there has been a large increase in total government spending in the Arctic as revealed by Table 3 and Figure 4. Increased government spending meant an increase in the number of government services being provided and also in the number of people being employed as illustrated by Table 4 and Figure 5.

Another consequence of the statement of Northern Objectives was the recognition of the need for a co-ordinated approach to planning in the Arctic. With this view in mind the Advisory Committee on Northern Development was set up to provide for joint planning and co-ordination of all federal policies and programs relating to the Arctic.[52]

As promised during the Arctic Transportation Conference and reflected by the need for an organized approach toward the northern objectives, the Arctic Transportation Agency was set up to determine and control development of the transportation infrastructure in the Arctic, which comes under the authority of Transport Canada. The Arctic Transportation Agency aims to provide multi-modal transportation systems which will contribute to the achievement of the national objectives for Arctic Canada.[53]

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[52]Canada, Department of Indian Affairs and Northern Development: Advisory Committee on Northern Development "Federal Departments, and Agencies," in Government Activities in the North 1975-1976, (Ottawa: Minister of Supply and Services Canada, 1976), p. 9.

[53]Ibid., p. 165.

TABLE 3

Total Northern Spending by Government-1973/74 to 1976/77

Government	1973/74 (Actual)		1974/75 (Actual)		1975/76 (Forecast)		1976/77 (Planned)	
	($ millions)	(%)	($ millions)	(%)	($ millions)	(%)	($ millions)	(%)
Federal	188.8	54.8	219.8	53.9	269.7	52.5	301.7	51.7
Northwest Territories	115.4	33.4	134.8	33.1	174.7	34.1	216.1	37.0
Yukon Territory	40.7	11.8	53.0	13.0	68.7	13.4	65.6	11.3
Total	344.9	100.0	407.6	100.0	513.1	100.0	583.4	100.0

* As noted earlier, certain activities, relating to National Defence forces stationed in southern Canada, investments in Panarctic Oils Limited and long-range research projects, are excluded from the aggregate data because of their special nature. Planned resource allocations for these items in 1976/77 total $60.6 million and 1,872 man years.

Source: Annual Northern Expenditure Plan 1976/77
Advisory Committee Northern Development North of 60°

TABLE 4

Total Northern Employment by Government - 1973/74 to 1976/77

Government	1973/74 (Actual)		1974/75 (Actual)		1975/76 (Forecast)		1976/77 (Planned)	
	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
Federal	4,233	50.5	4,312	49.2	4,632	50.2	4,754	49.9
Northwest Territories	2,911	34.7	3,117	35.6	3,227	34.9	3,353	35.2
Yukon Territory	1,238	14.8	1,334	15.2	1,377	14.9	1,421	14.9
Total	8,382	100.0	8,763	100.0	9,236	100.0	9,528	100.0

Source: Annual Northern Expenditure Plan 1976/77
Advisory Committee Northern Development North of 60°

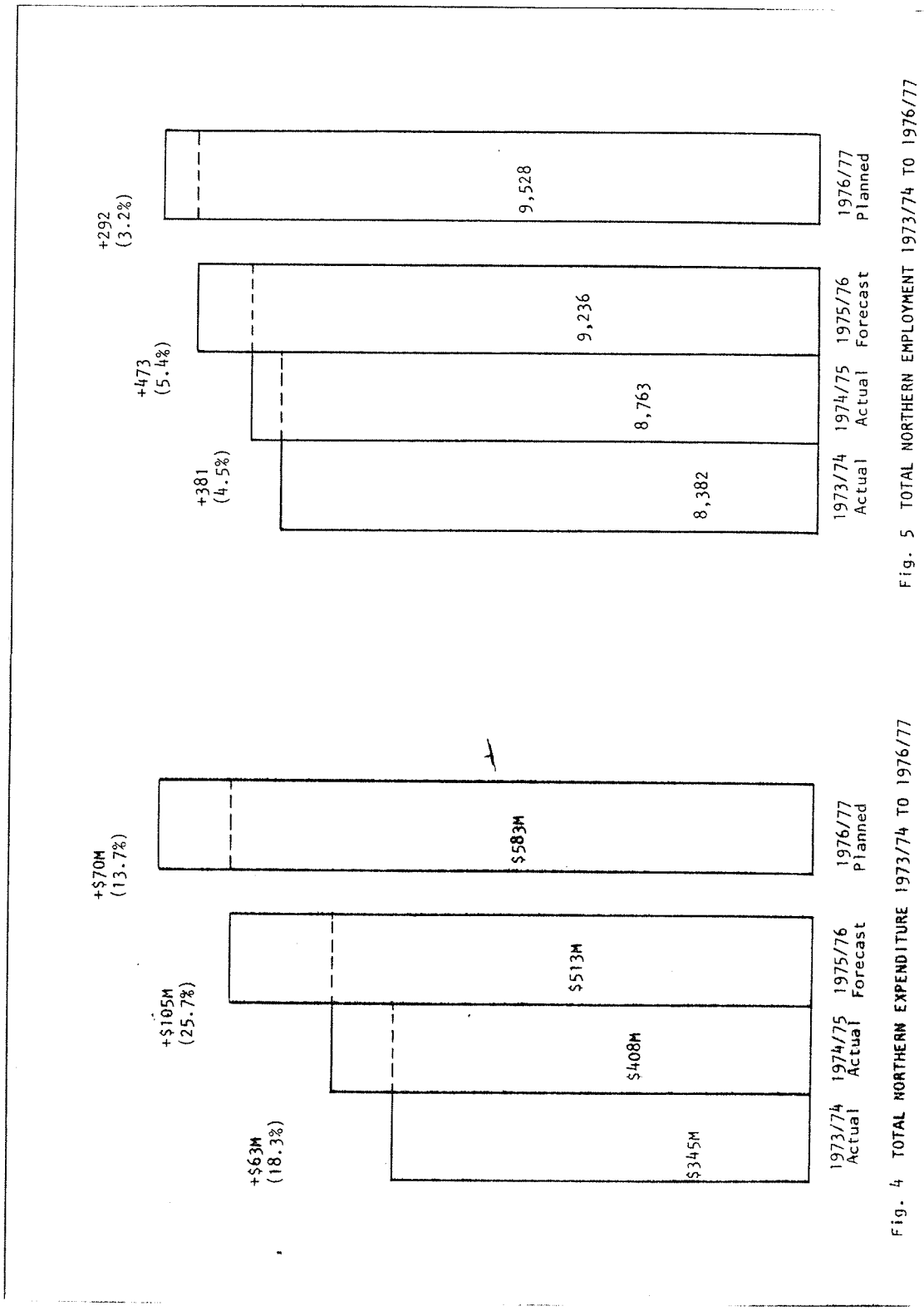

Fig. 4 TOTAL NORTHERN EXPENDITURE 1973/74 TO 1976/77

Fig. 5 TOTAL NORTHERN EMPLOYMENT 1973/74 TO 1976/77

Source: **Annual Northern Expenditure Plan 1976/77**
Advisory Committee Northern Development North of 60°

This agency, through a direct link to the Advisory Committee on Northern Development and Transport Canada, along with indirect contacts with the territorial governments and federal agencies involved in the Arctic, has an excellent perspective from which it can formulate and implement transportation programs which will have a positive impact upon the Arctic. By concentrating on transportation in the north the Arctic Transportation Agency has had the opportunity to evaluate and assess various transportation options open to the Arctic. The result of a great deal of research and the most notable achievement of the agency to date has been the preparation of the Arctic Air Facilities Policy.

The Arctic Air Facilities Policy

The formulation of the Arctic Air Facilities Policy began soon after the close of the Arctic Transportation Conference in Yellowknife. A working group was set up to review the air transportation system as it then existed in the Arctic. The committee concentrated on gathering information about existing air service, air traffic trends, and discernible gaps between services and facilities in Arctic air transportation. The research was based on interviews with concerned government officials, a detailed account of the transportation infrastructure in the Arctic and a study of the findings of the Arctic Transportation Conference. The following provides some of the findings of the working group taken from the publication of their results, "A Review of Air Transportation in the North". With regard to air service there were a number of identified difficulties. There was a wide variety of aircraft operating in the north which led to increased operation and maintenance costs. There was a special need to replace the piston-engined aircraft with their high operating

costs and inherent problems of cold weather operation. Also there was a need to consolidate traffic on some air carrier routes with associated upgrading of the type of aircraft being used. In the area of terminal and airway aids to navigation a number of concerns were also identified. The use of non-directional radio beacons to form the basis of the general air navigation system in the Arctic was found to be unsatisfactory because of their terrain problems, atmospherics, precipitation static and night effect. The working group also noted the fact that four groups namely the Department of Indian Affairs and Northern Development, the Department of National Defense, the Ministry of Transport and the Northwest Territories Government separately were involved in funding and supervising the construction of aerodromes in the Arctic. In addition, the working group observed that most communities in the Northwest Territories with a population of over seventy-five persons were licensed for some form or other of unit toll air services.

Based on the above observations, the working group recommended that the Ministry of Transport implement a program to upgrade aerodromes and, both approach and en route navigational aids at most Arctic airports. Specifically it recommended that aerodromes be developed to three standards to accommodate the three groups of aircraft needed to provide economic reliable air transportation in the Arctic. The decision as to a particular standard would depend on the class of aircraft required to serve the settlement's needs. The Type A aerodrome with a 6000' x 200' runway would accommodate aircraft such as the Boeing 737 jet. The Type B aerodrome with a 4200' x 150' airstrip would accommodate medium turboprop such as the HS-748 and YS-11. Finally the Type C aerodrome would suit STOL aircraft with its 2000' x 90' airstrip. Also, navigational and

weather aids would be provided to enable safe and reliable air service. The working group felt that their recommendations would be advantageous from several points of view. The Arctic would benefit from the expanded use of jet and turbo prop aircraft. Furthermore, it would help to homogenize air carrier fleets thus reducing maintenance costs and increasing operating potential.

While the recommendations of the working group would benefit the regional carriers operating in the Arctic there was also the view that the people of the Arctic would benefit both through the provision of a less expensive, more reliable system of air transportation and through economic side effects as a result of the improved transportation system. While the terms of reference did not call for an analysis of the impact that an upgrading of airport facilities would have on the economy and people of the Arctic it was assumed that there would be economic benefits such as jobs especially in the resource sector.

The Policy for the Provision of Air Transportation Facilities and Services in the Yukon and Northwest Territories was announced over three years after the Arctic Transportation Conference had ended.[54] During the time the policy was being developed it underwent a number of influences. While some of the basic concepts developed by the working group described above were retained, the Arctic Air Facilities Policy was very much influenced by the federal government's confirmation of seven National Objectives for Northern Canada. An attempt was made to ascertain from the users of air transportation such as the Territorial Governments, native associations and northern Chambers of Commerce their points of view concerning

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[54] The Edmonton Journal, 31 July, 1974.

Arctic air transportation.[55] Also, it was stated that an effective system of air transportation facilities was expected to contribute significantly to the resident's ability to obtain a higher standard of living, quality of life and equality of opportunity.[56] Prior to the actual announcement of the new facilities policy the Arctic Transportation Agency initiated a major study of the entire Arctic air transportation system from a service point of view. The hope was that this new study called the Northern Air Policy Study would complement the new facilities policy.

The Arctic Air Facilities Policy is aimed at providing the necessary airport facilities, weather services, and communications that would allow carriers to provide a regular, reliable level of air service to all communities in the Territories having a population of at least one hundred people. Arctic settlements are classified according to population, community role, air service route structure, and availability of other means of transportation. For each one of the airport classifications - Arctic "A", "B" or "C" a package of facilities has been described[57] which is aimed at meeting the identified needs of the settlements categorized in a particular classification. While the opinions and plans of air carriers will always be important considerations the key issue with regard to the categorization of the Arctic communities according to the Arctic Air Facilities Policy is the present and future prospects for usage of the air transportation facilities in a particular area. This view is supported by the fact that the facilities policy calls for a great deal of planning

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[55] Canada, Department of Transport, Newsletter, (Ottawa: Transport Canada, 14 May, 1973).

[56] Ibid.

[57] See Appendix A, pp.

and consultation between several concerned agencies and levels of government. The hope is that through the provision of an extensive consultation process there will be better opportunities for the implementation of the Policy to be more responsive to community needs.

The facilities policy also prescribes that the Ministry of Transport will operate and maintain Arctic "A" airports while the Territorial Governments will operate and maintain the Arctic "B" and "C" airports. While Transport Canada has major funding and regulatory responsibilities under the Policy the considerable role of the Territorial Government is also significant. With regard to the facilities packages themselves the Policy provides for passenger-cargo shelters for each airport category. Also the Policy allows for auxilliary facilities such as garages, maintenance equipment, fuel dispensing and storage, plus other servicing facilities.

Since the Arctic Air Facilities Policy was first announced a great deal of energy has been expended organizing an implementation procedure for the policy. New policy procedures for example in the areas of weather observation and telecommunications had to be developed to meet the special needs of the Arctic. Also much time has been spent consulting with various organizations such as the Territorial Governments, federal departments such as the Department of Indian Affairs and Northern Development, and the Department of Atmospheric and Environmental Services. On account of the Arctic Air Facilities Policy's commitment to 'local involvement' a number of consultation and settlement workshops have been held throughout the north. With regard to employment, training sessions have been held to prepare some Arctic residents for direct employment at the various airports. The Arctic Air Facilities Policy is being administered by the

three regions of Transport Canada namely the Western, Central and Quebec regions under the guidance of the Arctic Transportation Agency. While the policy has only been in effect since 1974, there seems to be little doubt that if it is fully implemented, it will have a profound impact on the Arctic way of life.

While the Northern Air Policy Study was mainly concerned with the issue of air service in the Arctic, it focused on three main concerns which would not be fully resolved with an upgrading of airport facilities. The cost and quality of air service in the north was an issue that had been the subject of a number of complaints.[58] The issue of air safety in the Arctic was due partially to the publicity engendered by the Martin Hartwell crash during 1972. Finally, the growing trend by corporate and government agencies to develop and operate their own air transportation services was the subject of a great deal of complaint from northern air carriers. The Northern Air Policy Study was conducted by a multi-disciplinary working group which spent a great deal of time researching and interviewing users and air carriers throughout the Arctic. In a policy discussion paper called "Air Services For Arctic Communities" the working group identified a number of key points. In their estimation a large number of user complaints about Arctic air transportation would be alleviated by the implementation of the Arctic Air Facilities Policy. However, the issue of what is an adequate level of service varies from community to community. The high cost of air transportation arises from the constraints to transportation posed by the Arctic. Many air carriers expressed the

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[58] Canada, Department of Transport, "Background", in Discussion Paper: Air Services for Arctic Communities, (Ottawa: Ministry of Transport-Arctic Transportation Agency, December 1973), p. 1.

desire for the development of a Third Level Air Carrier Policy in light of the above mentioned concerns. In this regard the possibility of financial subsidies to northern airlines has often been proposed.[59] The findings of the Northern Air Policy Study and an extensive study of third level air carriers across Canada called "Local Service Air Carriers" seem to point toward the need for new policy guidelines to define and improve the level of service provided by Third Level Air Carriers in Canada.

In 1976 the Arctic Transportation Agency presented an analysis which illustrated the potential for joint government and industry air services planning for the Arctic region. The study which was called the Joint Air Service Planning and Evaluation Review (JASPER) suggested that if the Dash 7 STOL aircraft were to be used as the 'critical' aircraft in a number of air service networks in the Arctic after 1978, long term savings would result from the fact that under normal operating conditions the Dash 7 requires less than a 3000 foot runway while conventional take-off and landing aircraft require more than 4000 feet to operate. Furthermore, the JASPER analysis suggests the savings in costs which would be considerable - considering the high cost of construction in the Arctic - could be achieved while providing a higher level of air service to most communities in the region.

The JASPER study is significant to this thesis from a number of points of view. The analysis seeks to rationalize air transportation planning in the Arctic to the extent that government and facets of Arctic air transportation would work together to achieve similar aims. Under this arrangement government no longer would provide air facilities which

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[59] Canada, Department of Indian Affairs and Northern Development, "Community Hearings Before Pipeline: Allman," in Dialogue North 1-77, (Yellowknife, N.W.T.: Dept. of Indian and Northern Affairs - Regional Public Affairs, January 1977), p. 9.

simply reacted to the requirements of the air carrier which in turn often bore little relationship to the socio-economic situation existing in a particular settlement or region. The JASPER study also points out that around the year 1978 most air carriers will have to replace their piston-engined aircraft, due to high operating costs and inadequate carrying capacities, with new equipment purchases. Overall, the JASPER analysis presents a view of air transportation in the Arctic which suggests that the complexity of the issue requires a comprehensive approach to the provision of air service in the region.

A critical issue with regard to the future of transportation and development in the Arctic is the direction which federal government transportation policy seems to be taking. Policy has evolved a great deal since 1967 when the National Transportation Act assigned a rather passive role to government.[60] In separate statements to the House of Commons during 1974, the Minister of Finance emphasized the special needs of the north and his desire to see transportation used as an instrument of national purpose.[61] In 1975 the Minister of Finance announced a new transportation policy in the House of Commons. He stressed that the transportation system must develop in a way that is consistent with public policy objectives. Also the need for a total transportation system providing accessibility and equity of treatment for users was emphasized.[62] With regard to this concern the government expressed its desire to work with provincial governments to develop a policy to improve access to and from re-

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[60] Hon. Jean Marchand, Statement of Transportation Policy, p. 4.

[61] Ibid, p. 1

[62] Ibid., p. 9.

mote areas.[63] These policy statements indicate an increased desire for government to use transportation as a tool to achieve desirable ends in remote parts of the country such as the Keewatin Region of the Northwest Territories.

Conclusion

Air transportation policy in the Arctic has been subject to a number of determinants - commercial, military and industrial. Also technological advances have supported the role of air transportation in the development of the north. Government involvement has shifted to a more interventionist stance especially concerning the lives of the people living in the north. In fact, government objectives of a socio-economic nature have become an important influence on the type of development taking place in the Arctic. The Arctic Air Facilities Policy represents a culmination in policy of these influences.

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[63] Canada, Department of Transport, Background Paper on Transportation Policy: Access to and from Remote Areas. (Ottawa: Transport Canada, June 1975).

CHAPTER III

THE SOCIO-ECONOMIC REALITIES OF THE KEEWATIN REGION

Development in the Keewatin has been shaped by the topography, natural resources and a number of forces external to the area. This chapter will trace the way that these influences have affected the region, in terms of four time periods.[64] The first period, the aboriginal era, precedes the time of direct contact between the Inuit and the whites. The transitional period describes an era of developing contact between the two groups. In the contact traditional period, the trader-missionary-police complex established itself in the Keewatin. In the final period, the centralizing era, the Keewatin population concentrated itself in seven communities. The second part of the chapter will discuss a number of critical issues which are significant for the future development of the Keewatin region. Finally the chapter will examine the role that transportation in the Keewatin has played in the past and is expected to play in the future.

Development Patterns in the Keewatin Region

During the aboriginal period the ancestors of the present-day-Inuit, the people of the Thule culture, pushed eastward from Alaska through the Canadian Arctic to Greenland. These people dispersed over large areas

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[64] David Dumas, "The Eskimo," Science, History and Hudson Bay, eds. C.S. Beals and D.A. Shenstone (Ottawa: Queen's Printer, 1968), p. 15.

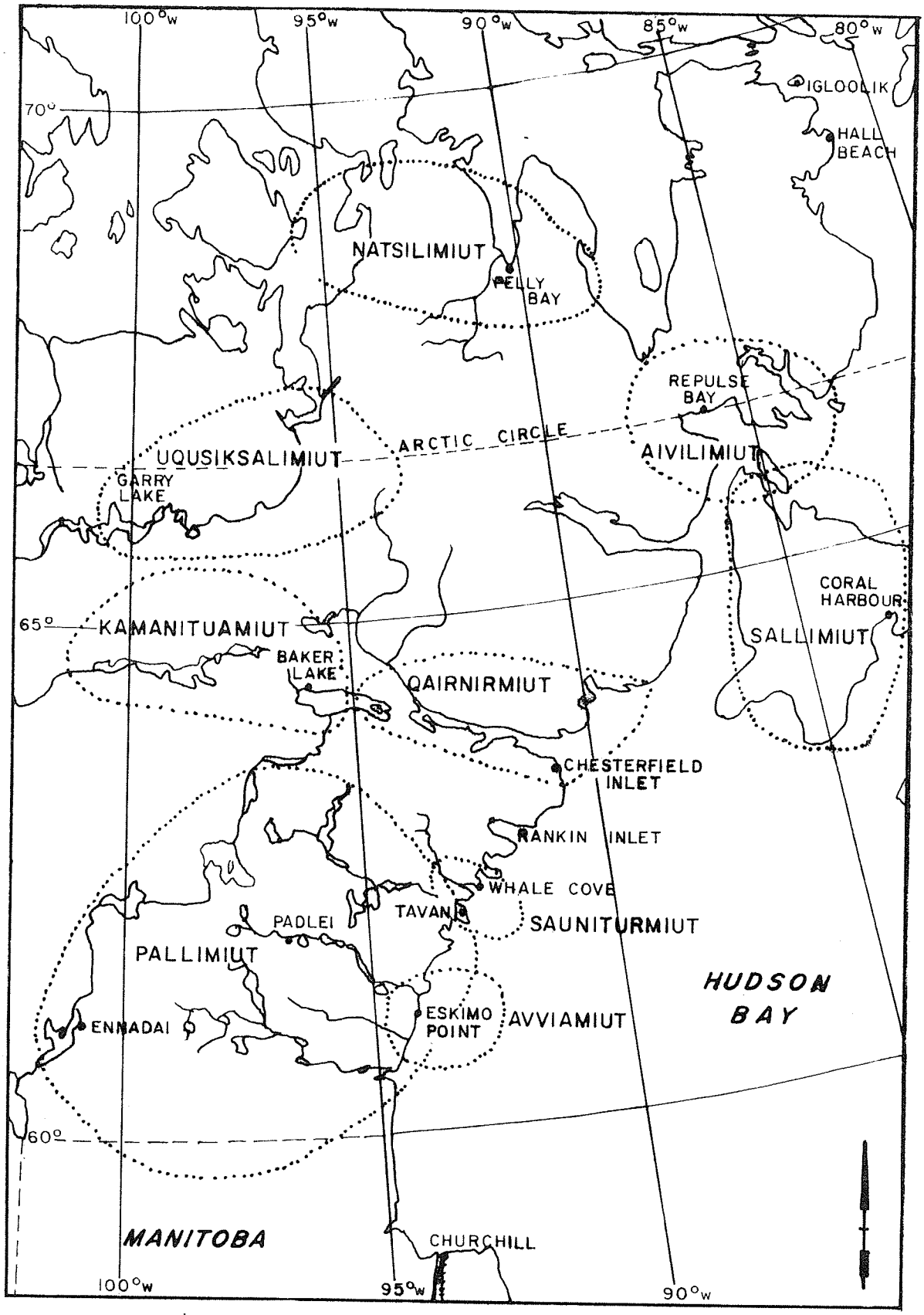

Fig. 6 DISTRIBUTION OF ESKIMO SUBCULTURAL GROUPS

Source: R. Williamson
Eskimo Relocation in Canada

due to the unproductive nature of the land and established twelve different Inuit groups and dialects;[65] a number of the groups located in the Keewatin region (See figure 6 on Page 43). These groups developed cultural differences which, reinforced by vague territorial boundaries, alienated the groups from one another. Within each of the groups, dependencies tended to encourage the development of close ties especially among members of the same family groupings. In fact, these kin relationships can help to explain a great deal about Inuit migration patterns both at the present time and in the past.[66] Apart from cultural differences, varied ways of obtaining food were significant; this fact was reflected by the prosperity of the coastal Inuit who hunted the huge Greenland whale[67] as opposed to the tougher life that the inland Inuit had to lead on account of their dependence on the caribou. The large amount of food and materials that an individual whale represented permitted the establishment of large prosperous settlements along the coast.[68] However because of intensive whale hunting by the European nations the whale became scarce and the Inuit communities were forced to scatter into smaller bands in the 18th century to search for their food.[69]

During the transitional period the Inuit slowly grew dependent on

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[65] Alex G. Gordon, Housing and the Social Environment (Yellowknife, N.W.T.: Special Projects, July 1971), p. 34.

[66] Dr. Robert G. Williamson and Terrence W. Foster, Eskimo Relocation in Canada (Saskatoon, Institute for Northern Studies, University of Saskatchewan, 1972), p. 86.

[67] Fred Bruemmer, "Whalers of the North," The Beaver, gen. ed. Malvina Bolus (Winnipeg: Hudson's Bay Co., Winter 1971), p. 47.

[68] Ibid., p. 47.

[69] Farley Mowat, A Whale for the Killing (Toronto: McClelland and Stewart, 1972), pp. 1-240.

the trade goods offered by the whites. Although the Hudson's Bay Company was formed in 1670 and established its base of operations, Fort Prince of Wales, at Churchill in 1718 the first real contacts in the Keewatin region did not take place until ships were sent northward from Churchill to Inuit coastal areas.[70] These trips were stopped in 1790 following which the Inuit had to make their way hundreds of miles to Churchill in order to trade for the goods upon which they had become dependent.[71] A great deal more time had to be spent travelling and trapping to obtain goods such as rifles from the Hudson's Bay Company. After 1860 American whalers in large numbers entered Hudson Bay. The entry of the whalers brought about a major locational change in the Inuit settlement pattern in the Central Arctic.[72] The whaling ships sometimes hired Inuit as guides, pilots and labourers which required that some families disrupt their normal annual cycle and become relatively sedentary. Another major change in the settlement pattern occurred when some Inuit wintered close to the ships spending the winter in the region.[73] A whaling station on Southampton Island was apparently instrumental in the extinction of the Sadlirmiut people by disease during 1902-03.[74] Through the transitional period both trading and whaling brought the Inuit and the whites into contact with one another resulting in some basic changes to the Inuit way of life.

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[70] W. Gillies Ross, "Whaling in Hudson Bay: Part 1-1765 to 1772," The Beaver, gen. ed. Helen Burgess (Spring 1973), p. 5.

[71] W. Gillies Ross, "Whaling in Hudson's Bay: Part II-1866-67," The Beaver, gen. ed. Helen Burgess (Summer 1973), p. 40.

[72] Williamson and Foster, Eskimo Relocation in Canada, p. 9.

[73] Ibid., p. 9.

[74] Doug Schweitzer, Keewatin Regional Dynamics (Regina: Faculty of Engineering, University of Saskatchewan, April 1971), p. 20.

In the contact traditional period, the Inuit way of life was fundamentally altered by the "trader-missionary-police complex". While the whaling industry collapsed after the turn of the century the Hudson's Bay Company established trading posts at Chesterfield Inlet in 1912, at Baker Lake in 1913 and at Coral Harbour and Eskimo Point in 1924. The white population that settled in the Keewatin at this time was characterized by the fact that it was small in number and experienced a large turnover rate. It was trapping for the fur trade that broke the Inuit's economic self-reliance.[75] In order to obtain supplies such as rifles and ammunition the Inuit needed to trap as many furs, mainly fox, as he possibly could. This situation forced the Inuit greatly to increase their mobility by adding substantially to the dog population. With the rifle the Inuit found it easier to kill large numbers of caribou which they sold to the whites or used to feed the increased dog population. The resultant depletion of the caribou population later contributed to serious famines in the region especially during the 1920's and 1950's.[76] The new modes of hunting altered the Inuit economic and social system in a number of ways. Hunting became more individual and did not require the mutual assistance and co-operative effort of former years.[77] The provision of easy credit at the Hudson's Bay Company stores and a developing market in Inuit artwork also served to increase the dependence of the Inuit on trade with the whites.

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[75]Hugh Brody, The People's Land (Canada: Penguin Books Ltd., 1975), p. 133.

[76]F.G. Vallee, Kabloona and Eskimo in the Central Keewatin (Ottawa: The Canadian Research Centre for Anthropology, St. Paul University, 1967), p. 38.

[77]Ibid., p. 35.

Another agent of change during the contact traditional period was the Royal Canadian Mounted Police. Since the turn of the century the force has established posts at Baker Lake, Rankin Inlet, Eskimo Point and Cape Dorset to serve the people of the Keewatin as administrators, registrars, census takers, ambulance operators, allocators of relief, mailmen, rescuers and law enforcement officers.[78] As local government became established in the region many of these duties were taken away, and, as a result, the force has become more directly involved with law enforcement.

Finally, the missionary was the third initiator of change during the contact traditional period. Roman Catholic missions were established at Chesterfield Inlet, Baker Lake and Eskimo Point while the Anglican Church settled at Eskimo Point and Baker Lake. Traditional religion in the Inuit culture had an immense significance which pervaded most aspects of their daily life such as getting a living, conserving resources, and curtailing disease. This is illustrated by the following comment:

> The taboo on pursuing one kind of activity while another is going on, for instance, trout fishing and sewing while the fall caribou hunt was underway, resulted in a channeling of effort into the most crucial activity; the displeasure of Nuliajuk at seeing unused carcasses on the tundra acted as a check on over-hunting; the taboo requiring people to vacate the dwelling where a death had occurred and preventing people from wearing the clothing of the dead probably curtailed the spread of disease.[79]

The Christian religion undermined the traditional beliefs with its efforts at conversion[80] to the extent that by the 1950's a majority of the Keewatin Inuit were Christian. The impact of the trader-missionary-police complex was a very pervasive one which besides influencing the Inuit to

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[78] Ibid., p. 100.

[79] Ibid., p. 170.

[80] H. Brody, The People's Land, p. 16.

repudiate much of their culture encouraged them to adopt a very different one.

During the centralizing period the people of the Keewatin became concentrated in seven settlements. This phenomenon has a variety of explanations. The era started when the Inuit began to locate in places where they could capitalize on the attractions provided by the early whalers and traders. This is reflected in the fact that the settlements of the Keewatin are located on Hudson Bay with the single exception of Baker Lake which is connected to it by a water route. Although the official policy of the trader-missionary-police complex was to keep the people on the land, their presence at locations in the Keewatin served as a strong centralizing force.[81] Coral harbour became a settlement when the Hudson's Bay Company and two Christian missions located there[82] and Chesterfield Inlet also developed into a community after the Hudson's Bay Company and a church mission were established there.[83] The settlement of Baker Lake prospered after two Christian missions and a number of fur trading companies, notably the Hudson's Bay Company, had established themselves.[84]

The promise of economic betterment has also served to attract population. During the 1950's large numbers from the Keewatin went to work on construction for the Distant Early Warning System. Also, when a nickel mine opened at Rankin Inlet it attracted people from all over the Arctic so that by 1958 about eighty Inuit men were employed full-time at the

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[81] Schweitzer, Keewatin Regional Dynamics, p. 23.

[82] W.O. Kupsch, gen. ed., Settlements of the N.W.T., 4 vols. (Ottawa: Government of Canada, 1966), p. 193.

[83] Ibid., p. 139

[84] Ibid., p. 54.

mine[85] while numerous others found jobs within the settlement. Both material attractions and improved social services in the fields of medical care, education and welfare served to attract Keewatin people from the land into the settlements.[86]

Shortages of food in the Keewatin created an impetus to move the people living in the interior to the region's established communities. During the latter 1950's the increasing scarcity of the caribou resulted in a severe reduction in the yield of fox pelts.[87] As a result of this situation forty-five per cent of the population of the region around Baker Lake had moved to the settlement by 1959.[88] In the Garry Lake area (See figure 2 on Page 11) after a number of Inuit had starved to death the government decided to transport the rest of the band to Baker Lake.[89] The government at this time persuaded two other groups of Inuit to allow themselves to be transported to the coast of Hudson Bay despite the fact that they were not faced with famine. One group was from Back River - Garry Lake area while the other, a chronic problem group with a history of mental and physical illness was from the Kazan River district.[90] Another famine in the Ennadai Lake area resulted in the survivors being transported to Eskimo Point and Rankin Inlet.[91]

Government sponsored relocation projects have also been instru-

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[85] Vallee, Kabloona and Eskimo in the Central Keewatin, p. 50.

[86] Schweitzer, Keewatin Regional Dynamics, p. 23.

[87] Vallee, Kabloona and Eskimo in the Central Keewatin, p. 39.

[88] Schweitzer, Keewatin Regional Dynamics, p. 22

[89] Kupsch, Settlements of the N.W.T., p. 57.

[90] Vallee, Kabloona and Eskimo in the Central Keewatin, p. 50.

[91] Schweitzer, Keewatin Regional Dynamics, p. 26.

mental in changing the traditional settlement pattern.[92] In 1958 the government set up the Keewatin Re-establishment Project for the migrants from the interior at a place called Itivia, about a half mile from Rankin Inlet. This settlement faced a number of difficulties many resulting from the fact that the group from the Kazan River required special help.[93] While this project did achieve some success in rehabilitating some of the Inuit from the interior, Itivia was abandoned by 1962.[94] In 1959 the community of Whale Cove was established because of a reputed abundance of wildlife in the area, as a rehabilitation project for migrants from the Garry Lake - Back River area and the Ennadai Lake region.[95] In a number of respects the Whale Cove experiment has proved to be a success. The people of the community have expressed a preference for their lifestyle at Whale Cove which has allowed them to hunt and fish at will.[96] The population while growing at the slowest rate of any community in the Keewatin[97] has achieved a level of self-sufficiency - a manifestation of this is the fact that the people own and operate their own co-operative store.[98] In 1965 the government attempted to establish a small cannery operation at Daly Bay located north of Chesterfield Inlet. With this intention in view a total of fifty-four people from Rankin Inlet and Chesterfield Inlet were moved

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[92] Ibid., p. 26.

[93] Kupsch, Settlements of the N.W.T., 4:24.

[94] Schweitzer, Keewatin Regional Dynamics, p. 26.

[95] Kupsch, Settlements of the N.W.T., 4:182.

[96] Ibid., p. 182.

[97] See Table 1 on page 12.

[98] Kupsch, Settlements of the N.W.T., p. 183.

to the location.[99] However, this project had to be abandoned because of a dwindling supply of fish in the region. Since the demise of the North Rankin Nickel Mines there have been many efforts made to find employment for the displaced workers throughout the Arctic and in the northern parts of a few provinces but with little success.[100] Nevertheless it has been recognized that relocation of Inuit to Euro-Canadian communities may become more important in the future to cope with an expanding population with little hope of economic expansion.[101]

It is clear from this historical sketch of the Keewatin region that, while much change has taken place over the past few hundred years, there is a common pattern. Forces external to the area still exert a major influence on life in the Keewatin. The Inuit while reacting to these influences still retain a great deal of their cultural uniqueness. The role of the white population is reflected not so much by their numbers but through the influence of their technology, institutions, and policies. A closer look at the Keewatin will describe the specific issues which will determine the course of its future development.

Characteristics of the Keewatin Communities

The success or failure of any significant development in the Keewatin will depend in large measure on its ability to meet the socio-economic needs of the people in the region. The vast majority of the people of the Keewatin are Inuit and this situation does not seem to be changing to any

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[99] Schweitzer, Keewatin Regional Dynamics, p. 27.

[100] Williamson and Foster, Eskimo Relocation in Canada, p. 111.

[101] Ibid., p. 1.

appreciable degree.[102] This fact has important social, economic and political implications for development in the Keewatin. The high birth rate in the Keewatin[103] is significant from a number of points of view. This situation will put increased demands on the present medical, educational and recreational facilities located in the settlements. It will also result in an increased need for both social and economic assistance. In the future there will be an increased need to find employment opportunities for the increasing number of young people. The region does face a large unemployment problem among the Inuit.[104] This situation is in marked contrast to that of the white people living in the Keewatin. This suggests that there is a critical need for economic development which will provide jobs for the Inuit. In addition there is an obvious need for increased efforts in the area of adult education and retraining. In light of the increasing consciousness by the Inuit of their cultural heritage, means will have to be found to shore up Inuit traditions and also provide a significant role in development for Inuit organizations.

The white population for the foreseeable future will have an important part to play in development in the Keewatin. This is reflected by the significant positions which they occupy in the Keewatin.[105] There is a problem with the high turnover rate among the white population which, besides being very costly, also restricts continuity in terms of policy and program implementation in the region. The fact that a majority of the

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[102] See Table 1 on p. 12.

[103] See Table 12 in Appendix B.

[104] See Table 13 in Appendix B.

[105] See Table 11 in Appendix B.

white population in the Keewatin has not been resident in the region for more than one year[106] illustrates the seriousness of the situation. The consequence of the continued need for whites in the Keewatin is found in efforts to raise the standard of living so that white people will be encouraged to remain for longer periods in the Keewatin.[107] In turn, care will have to be taken to avoid a stratification of society in the Keewatin based on either race or standard of living.

In view of the population centralization which has already taken place in the Keewatin, it has been suggested that this process is continuing and should be encouraged by government.[108] While population growth has tended to fluctuate widely in the past, the rate of change from 1971 to 1976 provides a good measure of the population concentration that is taking place in each of the communities of the Keewatin.[109] With regard to the issue of economic development in each of the settlements of the region, a study of the percentage increase in sales volume for the Hudson's Bay Stores located in the Keewatin provides a good indication of the actual growth taking place.[110] Also a look at the total value of the furs sold in the communities of the region gives an illustration of both the income that can be earned through the pursuit of traditional activities and the significance it may have in a particular settlement.[111]

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[106] See Table 14 in Appendix B.

[107] MacKinnon and Neufeld, Project Mental Health: A Study of Opinion North of 60°, p. 63.

[108] N.W.T. Legislative Assembly, Council of the N.W.T. Debates, 51st Session, 7th Council, 18 January, 1974, p. 3.

[109] See Table 1 on p. 12.

[110] See Table 15 in Appendix B.

[111] See Table 16 in Appendix B.

By analyzing this information a number of trends are obvious. The population and growth prospects for Rankin Inlet, Baker Lake and Eskimo Point seem assured. The prospects for both Whale Cove and Chesterfield Inlet seem to be decreasing. The question of whether or not government should actively pursue further centralizing of population is a very controversial one. Proponents of further centralization suggest that great savings could be achieved by reducing the wasteful duplication of services being provided in the communities of the region. Besides economies of scale being achieved in the provision of services the proponents suggest that the same type of saving could be accomplished in the cost of living in the Keewatin. The argument that population centralization should not be actively pursued in the Keewatin can be presented in a number of ways. The fact that many native people express a preference to return to the land[112] is at least partially due to the increasing urbanization which is taking place in the Arctic. It would seem, that a fundamental consideration such as population centralization should wait until an economic and social strategy has been articulated for the region.

The Keewatin economy is almost totally dependent on government financing. Unfortunately the information to support this assertion is not available for publication. Finance in the Keewatin is provided by government to individuals, organizations and companies in an effort to generate employment and income in the Keewatin. In one form or other government is responsible for much of the employment in the Keewatin.[113]

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[112] N.W.T., Legislative Assembly, Council of the N.W.T. Debates: Official Report, with an Opening Address by Commissioner S. Hodgson, 51st Session, 7th Council, 18 January, 1974, p. 3.

[113] See Table 11 in Appendix B.

Investment by the private sector is particularly lacking in the Keewatin. The constraints to Arctic development that have already been described apply especially well in the Keewatin. The solution often presented as the significant first step needed to overcome the natural constraints of the Arctic and to encourage development is an improved transportation system for the Keewatin Region.

Transportation in the Keewatin

From the description of the Keewatin already given, it is clear that for every development of significance in the area transportation has directly or indirectly played a major role. Since the Keewatin has grown more dependent on southern Canada during the past several years the significance of transportation in the region has actually grown. The Keewatin is totally dependent on the marine and air modes, for most transportation within the region and all transportation connecting with points outside the Keewatin. Although the region does supply some of its own food from the land and sea, the Keewatin is dependent on southern markets for most of its food supply. With regard to items of clothing, household operation, personal care, hunting and trapping supplies, the area is totally reliant on southern distribution centres and on the transportation system. In 1973, a major study of the cost of living in the Northwest Territories was conducted. Market Information Services Ltd., the organization which carried out the research came up with a number of results which willustrated the significance of transportation to the Keewatin region.

Consumer goods in the Keewatin cost more than they do in Winnipeg

or in the rest of the Northwest Territories.[114] The much higher costs in the Keewatin for the basic necessities of life as opposed to those for Winnipeg underline the potential that exists for a much lower standard of living in the Keewatin. By examining the costs per pound, to ship goods by air and by water from their supply points in 1973 it is possible to realize the great expense involved in providing the Keewatin with consumer goods on a year round basis.[115] Also by reviewing the living costs in each settlement of the Keewatin in reference to both Yellowknife and Winnipeg it is obvious from the higher costs which exist at Whale Cove that economies of scale do influence the cost of consumer goods in the Keewatin.[116] However, it is widely accepted that both marine and air transportation are key influences in the higher cost of living in the Keewatin region.

Marine transportation along Hudson Bay has always been the traditional freight carrier in the Keewatin. Previous to 1975 most of freight to supply the Keewatin was transported from Montreal in a sea-lift.[117] Air freight was shipped to the Keewatin from Winnipeg via Churchill. Bulk fuel for the Keewatin was shipped from Churchill after it had been transported there by oil tanker.[118] In 1975 the Northern Transportation Company (NTCL) was granted a five-year contract to supply the communities of

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[114] See Table 17 in Appendix B.

[115] See Table 18 in Appendix B.

[116] See Table 19 in Appendix B.

[117] See Table 20 in Appendix B.

[118] Canada, Department of Indian and Northern Affairs North of 60°, Benefits and Costs Involved in Eastern Arctic Resupply Through Churchill, by G. Brett Maxwell, (Ottawa: Department of Indian Affairs and Northern Development, May 1973), p. 6.

the Keewatin through the port of Churchill. While this decision did have policitical undertones[119] part of the explanation was based on the view that over the long term it would be cheaper to ship freight through the port. On this basis the federal government promised to pay an operating subsidy. During the first year of operation the subsidy amounted to $771,108 while in 1976 it fell to $202,042.[120] The freight rates as illustrated in Table 5 have not risen appreciably since 1975.

TABLE 5

Rate Structure (Per Short Ton) from Churchill to all points in the Keewatin

	1975	1976	1977
Government Bulk (fuel)	44.00	45.40	n/a
Government Deck	221.00	210.40	n/a
Non-Government Deck	165.00	174.00	183.00

Source: Personal Communication, D.S. Robinson, Traffic Manager, Northern Transportation Company Limited

The present marine operation is composed of a single three-engined tug plus four barges each having a capacity of nineteen hundred tons apiece. The company expects a three per cent increase in the cargo tonnage and a six per cent increase in the demand for bulk fuel in the upcoming 1977 season.[121] It is anticipated that after this season the Northern Transportation Company will have to increase its carrier capacity plus provide

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[119] Capt. Hampton, personal letter.

[120] D.S. Robinson, personal letter.

[121] Capt. Hampton, personal letter.

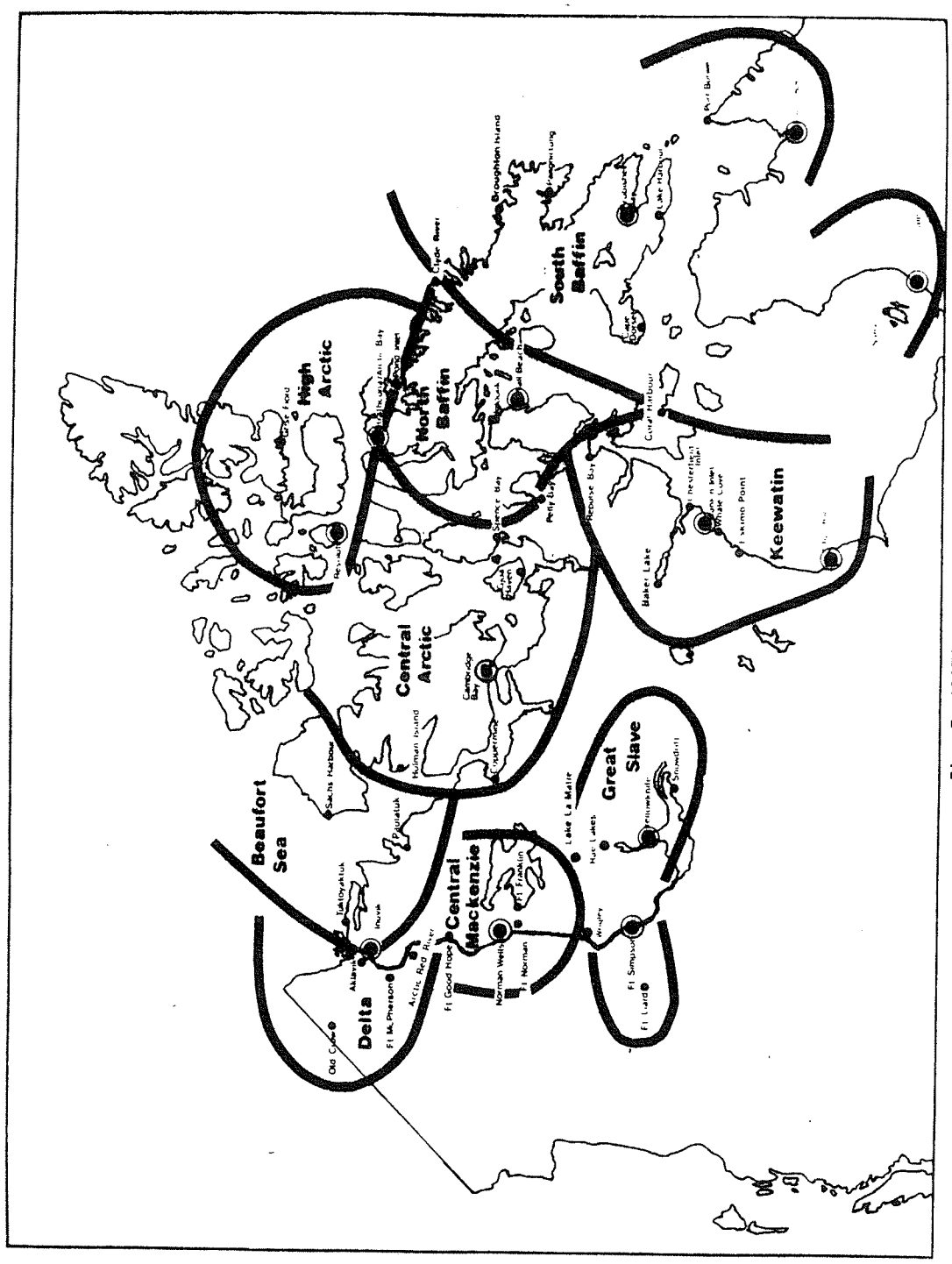

Fig. 7 ARCTIC AIR NETWORKS

Source: The JASPER Report

refitting facilities at Churchill. Since this company has a five-year monopoly on all freight transportation to the Keewatin, and this contract is likely to be renewed, there is a basis for the expectation that the federal government, owned company will upgrade the present level of service in the region.

Air transportation in the Keewatin grew slowly after men like Charles Lindbergh visited the area in the 1920's and early 1930's in search of mineral wealth.[122] It was not until after the construction of airports at Churchill and Coral Harbour that air transportation became a regular feature in the Keewatin. During the 1960's Transair started as a small air carrier providing scheduled service to the region through Churchill. By the early 1970's all communities in the Keewatin were receiving air service on a regular basis supplied by either Transair or a number of charter air carriers. Based on the present service patterns in the Arctic (See figure 7 on page 58) the communities of the Keewatin make up a separate air network. The Keewatin air network revolves around two hubs, namely Churchill and Rankin Inlet (See figure 8 on page 60). The designation of Rankin Inlet as a hub is due mainly to its significance as the regional administrative centre for the Territorial government in the Keewatin. Also Rankin Inlet does occupy a predominant position in the Keewatin with regard to both passenger and freight traffic.[123]

The structure of the air transportation system in the Keewatin has been undergoing a number of significant changes in the past few years. With regard to the air service being provided[124] Calm Air Ltd. operates a

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[122]Elliott, personal letter.

[123]See Tables 21 and 22 in Appendix B.

[124]See Table 24 in Appendix B.

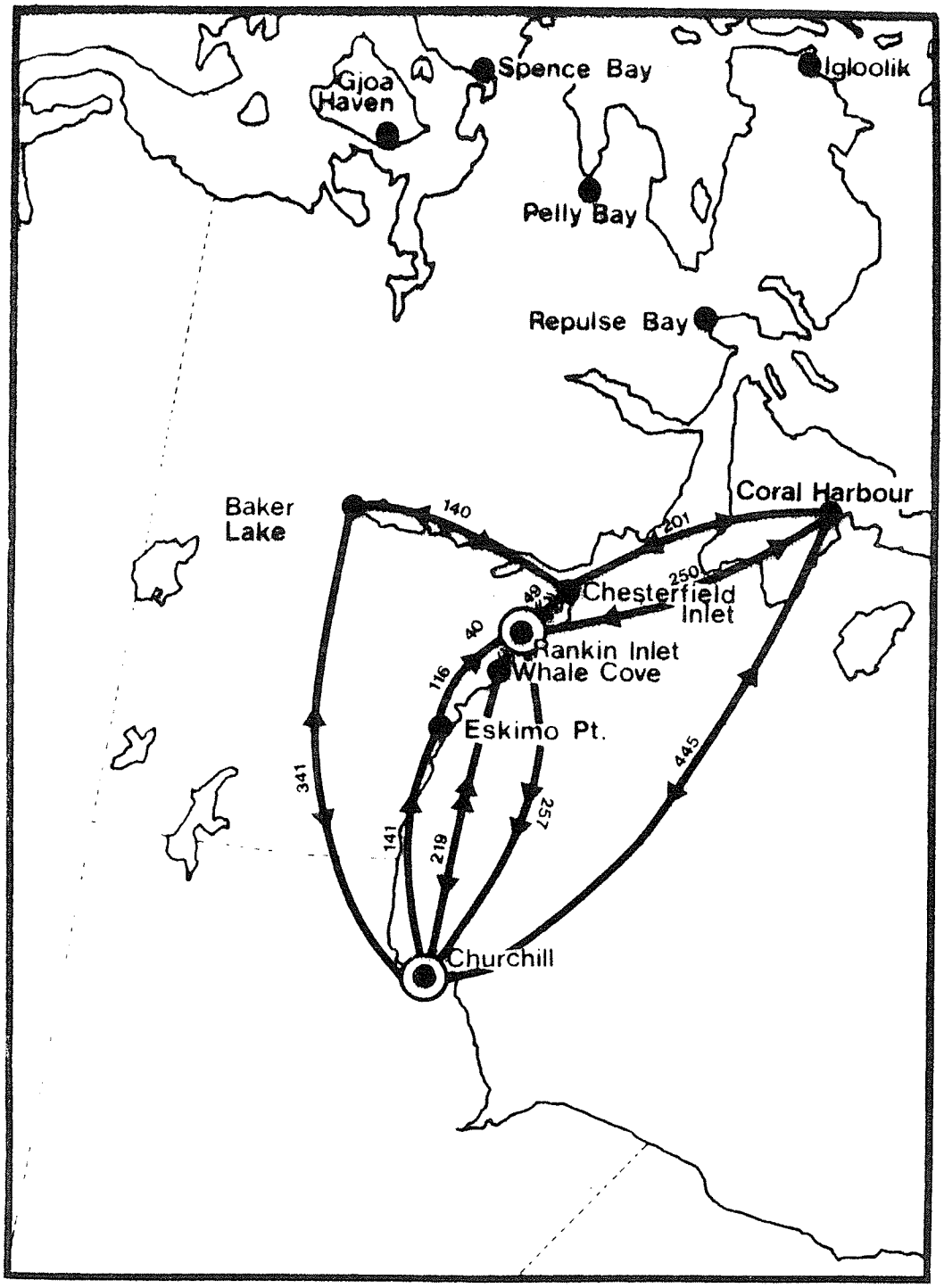

Fig. 8 KEEWATIN AIR SYSTEM

Source: The JASPER Report

scheduled Twin Otter service to Chesterfield Inlet, Coral Harbour, Eskimo Point and Whale Cove from Rankin Inlet while Transair provides a YS11 service into Eskimo Point, Rankin Inlet and Baker Lake from Churchill. The implementation of the Arctic Air Facilities Policy is proceeding in the region and this program has implications for air service in the Keewatin.

However, at present, air service in the region can be characterized in a number of ways. A major concern is the high costs involved; these are illustrated in Table 6 on page 62. The upper half of the matrix (above the diagonal) is the cost of an air fare between each pair of settlements in cents per seat-mile while the lower half of the matrix is the cost of shipping goods by air freight in dollars per ton-mile. The rates for passenger travel varied from a low of 32.5 cents per seat-mile between Baker Lake and Rankin Inlet to a high of 65.4 cents per seat-mile between Baker Lake and Chesterfield Inlet. The rate for a comparable distance on a route operated by Transair between Dryden and Thunder Bay is 23.4 cents per seat-mile. Air freight rates varied from a low of $3.13 per ton-mile between Baker Lake and Eskimo Point to a high of $6.75 per ton-mile between Baker Lake and Rankin Inlet. The comparable rate for the route in Southern Canada, referred to above, is $1.67 per ton-mile.

Another major transportation concern in the Keewatin is the dependability of the air service particularly with regard to its regularity and reliability. The factors which are involved in determining the dependability of the air service are the weather, airport facilities, air carrier equipment and the sense of responsibility that an air carrier has toward meeting its commitments. Either improved airport facilities or aircraft equipment will reduce the influence that weather could have on delaying or cancelling flights. An improved attitude on the part of the

TABLE 6

Airline Passenger Fares and Freight Rates Between Keewatin Settlements (1977)

Passenger Fares in Cents/Seat Mile

Air Freight Rates in Dollars/Ton Mile

	Baker Lake	Chesterfield Inlet	Coral Harbour	Eskimo Point	Rankin Inlet	Whale Cove
Baker Lake		65.4_1	55.6_1 35.6_2	41.3_2	32.5_2	64.9_1
Chesterfield Inlet	6.452_1		41.2_1	40.0_2	61.4_1	61.9_1
Coral Harbour	5.580_1	4.058_1		35.2_2	49.3_1	50.6_1
Eskimo Point	3.13_3	3.68_3	3.42_3		40.3_2	39.8_2
Rankin Inlet	6.75_1	5.965_1	4.861_1	3.73_3		58.3_1
Whale Cove	6.538_1	5.905_1	5.059_1	4.09_3	5.833_1	

Source: 1. Calm Air Tariff Proposal Rates Effective Apr. 11/77
2. Transair Proposed Fare Increase Rates Effective Mar. 7/77
3. Present Freight Rates Transair March, 1977

air carriers reflected either in an air service committed to fulfilling user needs or, at least, in the use of equipment which is suitable for the Keewatin air network, would very much improve the regularity and reliability aspects of air service in the Keewatin. The irregularity of service in the region can be represented by an illustration showing for three Keewatin settlements the percentage of flights flown the same day they were scheduled (see figure 9 on page 64). Besides being an inconvenience to users such a service can also result in increased costs and problems of a more serious nature to settlements which depend on air transportation as their only means of year-round transportation. Given the sparse nature of settlement in the Keewatin and the dependency of the settlements on the rest of Canada, air transportation and its infrastructure has become a key element in the existence of the region. Based on its present significance the upgrading of facilities outlined in the Arctic Air Facilities Policy has important implications for the future development of the Keewatin.

Current Circumstances in the Keewatin

There are a number of prospects for the Keewatin region which will require an improved transportation infrastructure along with a sensitivity to the special needs of the area. The growing self-awareness of the Inuit as reflected by the emergence of a number of native organizations such as the Inuit Tapirisat of Canada, the Inuit Cultural Centre and the Keewatin Inuit Association indicate a new militancy with regard to a land claim settlement for the Inuit. There is cause for optimism concerning the potential for a land claim settlement within the next decade.[125] Since the

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[125] See Chapter 1, p. 13-14.

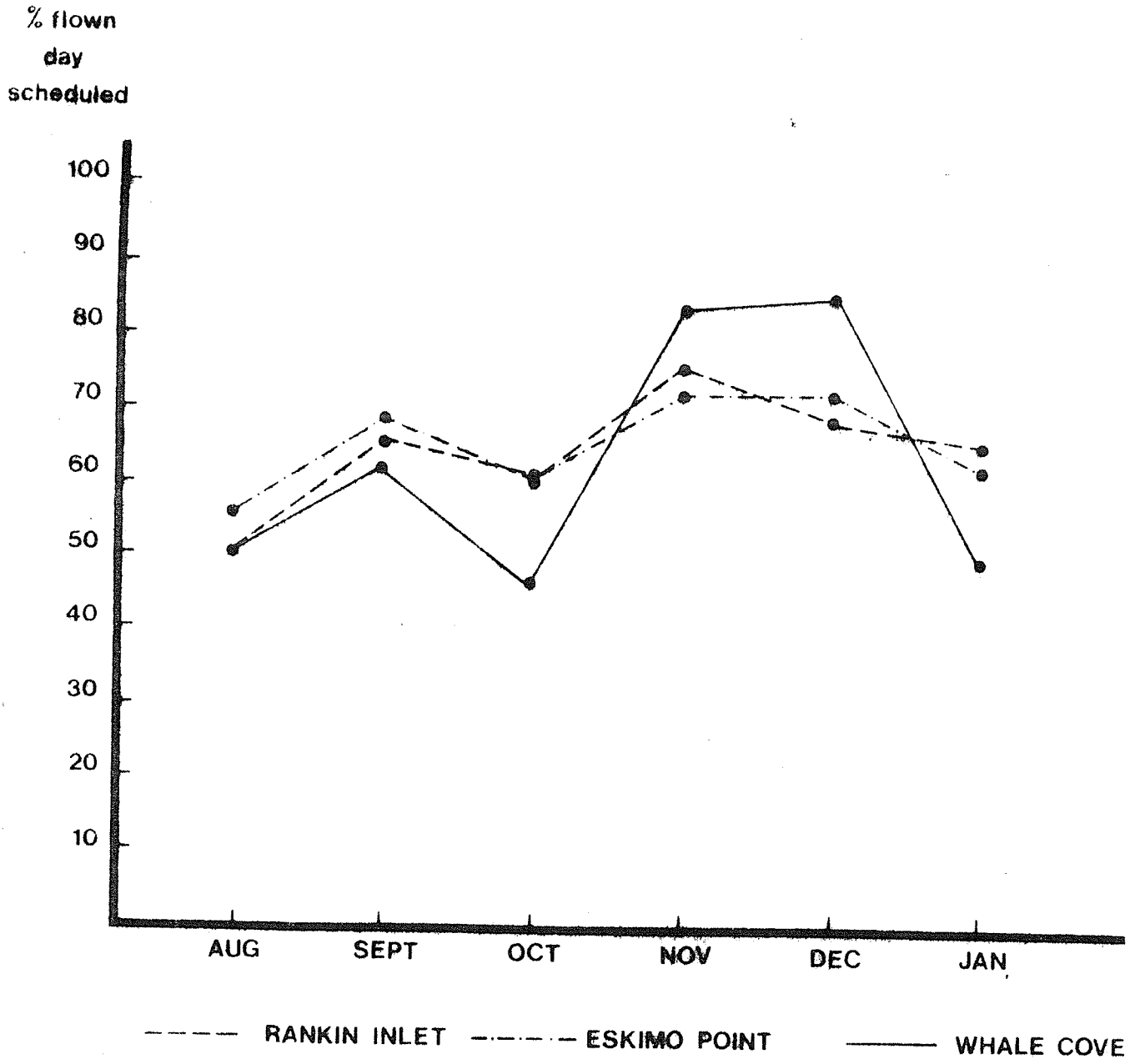

Fig. 9 KEEWATIN REGULARITY OF SERVICE

Source: The JASPER Report

Inuit do have a strong commitment to development in the Arctic[126] it is likely that any funds realized in a land settlement would be invested in the Arctic. The fact most of Canada's Inuit live in the Keewatin would indicate that a large part of their investment efforts will be made in the region.

With regard to resource development it is considered unlikely that fossil fuels will ever be found within the boundaries of the Keewatin.[127] There does exist a strong potential for mineral development in many parts of the region. The most promising is the so-called Rankin Inlet-Ennadai belt which stretches for four hundred miles from Hudson Bay to Ennadai (See figure 2 on page 11) and is at least one hundred and fifty miles wide.[128] Furthermore the rise in mineral prices recently, the increase in basic geologic information on the belt, and the increasing tempo and degree of sophistication of exploration are increasing the certainty of and decreasing the time before a major discovery.[129]

Another prospect which would bring prosperity for a short term to the area would be the construction of the proposed Polar Gas Pipeline through the western part of the Keewatin. This route is considered the most likely one to be followed if a pipeline is actually built to transport gas from the High Arctic to southern markets. Although Polar Gas has invested a lot of funds and energy to support a pipeline route a num-

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[126] Nunavut: A Proposal for the Settlement of Inuit Lands in the Northwest Territories, p. 19.

[127] Shilts, personal letter.

[128] R.H. Ridler and W.W. Shilts, Mineral Potential of the Rankin Inlet, Ennadai Belt (n.p., reprinted ed. Canadian Mining Journal, July 1974).

[129] Ibid.

ber of constraints have arisen. The new urgency with regard to the need for natural gas suggests that a quicker method will have to be found to transport gas to southern markets. Also it is questionable whether Canada could afford to build a Polar Gas pipeline along with a Mackenzie Valley pipeline - although no decision has yet been reached on this project. The alternative method to transport gas from the High Arctic to southern markets would involve liquification of the gas and shipment by tanker. The fact that an Inuit land claim is not settled also militates against the development of a pipeline route. Because the prospect of pipeline construction is at best a tentative proposition and the fact that most of the benefits would accrue during the construction period, the prospect of a land claim settlement and mineral development offers more long term promise for the Keewatin region although development with all three elements is possible.

Given the pressing concerns of a social nature that face the people of the Keewatin it appears that the quality of life of the people of the region depends on the economic development of the region. This view does have some justification if one considers the fact that the size of the Keewatin population and the tastes and preferences to which it has become accustomed preclude a major "back to the land movement" among the Inuit. Even if this movement did occur there is no doubt that the resources of the land and the sea would do little more than support a fraction of the population which presently exists in the region. The alternative to economic development could be encouraged depopulation or increasing subsidization. Both of these solutions could bring new problems which would serve to do little but aggravate the existing situation.

In the Keewatin the federal government and the Hudson Bay Company

are major influences on development. Both of these institutions, the Company for a very long period and the government in modern times, have conditioned in a fundamental manner the way of life as it has evolved in the Keewatin. Certainly if there is to be a transition of Keewatin society from its present welfare orientation to that of greater viability and self-determination, changes in both the attitudes and structures of government and the Hudson Bay Company will be needed.

The Keewatin region is an area with a potential for economic development while posing a number of social concerns which will require attention in the near future. Economic development in the Keewatin will be largely decided by forces external to the region. Transportation has played a major role in the past; air transportation because of its potential for year-round accessibility is expected to play a major role in the future of the region. The Inuit in the Keewatin have a long history of response to a variety of external impacts. While the Inuit way of life has certainly been shaped by these influences, Inuit culture still remains a vital part of Keewatin life. Most of the changes that have taken place in the Keewatin have been transmitted by the white population of the region. The white population has always been characterized by its short period of residency in the Keewatin. It is within this milieu presented by the Keewatin region, that the Arctic Air Facilities Policy is being anticipated as to its impact.

CHAPTER IV

THE RELATIONSHIP BETWEEN THE ARCTIC AIR FACILITIES POLICY AND COMMUNITY LIFE IN THE KEEWATIN

The special features of the Keewatin region have already been given definition. The Inuit population is seen to have evolved through a series of external influences and internal interactions. The role of the white population has been a growing one as the region has developed relationships with external regions. The Arctic Air Facilities Policy is the product of a somewhat complex series of air transportation development phases and a variety of public policy statements of the federal government. In fact the major influences involved in the shaping of the Arctic Air Facilities Policy anticipate the relationship that does exist between the Policy and community life in the Keewatin. Of key importance in the evolution of the Arctic Air Facilities Policy was the recognition of the importance of air transportation in Arctic development and the role that technology could play in increasing that potential. In addition there was the realization that air transportation could be used to accomplish objectives of a non-economic nature such as the improvement in the quality of life in the Arctic. Another influence which was instrumental in the formation of the Policy was a growing awareness of the significance of the Arctic. While its strategic location with regard to defence was somewhat deemphasized, there was an increasing realization during the 1960's and 70's of the important resource potential of the area. At the same time there

was a growing recognition by the general public of the disadvantaged condition of its native population with resultant pressure on government to attempt to alleviate this situation.[130] The Arctic Air Facilities Policy is a response to these influences. In effect the Policy seeks to exploit the use of air transportation in the Arctic not only to meet the expectations of the users and air carriers but also to ensure life in the communities of the Arctic will be more fully supported and improved.

The relationship between the Policy and community life in the Keewatin is underlined by the objectives of the Policy. The framework into which the objectives of the Policy have been officially placed is the federal government's National Policies for Northern Canada;[131] the Policy thereby becomes part of a massive federal government involvement in the Arctic.[132] Also the federal government's jurisdictional authority grants it an overwhelming influence on the future course of development in the Arctic. These considerations are especially significant with regard to the Keewatin. This region although offering some prospects for economic development has never been able to attract sufficient government or private sector interest fully to realize its potential. Also the dependence of the Keewatin on various forms of government assistance makes the region especially susceptible to the proposed policies and objectives of the federal government.

The Arctic Air Facilities Policy encompasses almost all of the

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[130] Max Ward, "Air Transportation in the Canadian North", in Arctic Transport: Proceedings of the Arctic Transportation Conference Yellowknife, N.W.T., December 8 & 9, 1970, 1:241.

[131] See page 26 of Chapter 2.

[132] See Table 2 on page 29.

federal government's spending on air transportation in the Arctic and in fact dominates the whole Transport Canada effort in the Arctic (See Table 7 on page 71). Table 7 also indicates that the Transport Canada effort is aimed at the realization of the objectives of economic growth and quality of life. Transport Canada has an extremely important function in relation to the total effort involved in the realization of these two objectives.[133] With regard to the objective of economic growth Transport Canada spends more than any other federal government department. Second to the planned expenditure of the Department of National Health and Welfare, Transport Canada has the largest expenditure aimed at the realization of the objective of quality of life for the 1976/77 fiscal year.

In announcing the National Policies for Northern Canada Jean Chretien, the Minister of Indian Affairs and Northern Development, made a number of remarks of a general nature about the Keewatin region and its Inuit population.[134] He stated that the restricted opportunities for developing the economy in regions such as the Keewatin and the rapid rate of natural increase in the Inuit population could stimulate migration to more favoured regions particularly by educated and trained people. Mr. Chretien also suggested that, when possible, both non-renewable and renewable resource extraction should be encouraged along with the growth of co-operatives and distinctive Inuit organizations. In summary, Mr. Chretien added that the real need was to concentrate on means of enhancing the self-respect and livelihood of the Inuit through diversified education and vocational

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[133] See Table 2 on page 29.

[134] Canada, Department of Indian Affairs and Northern Development, Report of the Standing Committee on Indian Affairs and Northern Development: The Government's Northern Objectives, Priorities and Strategies for the 70's by the Hon. Jean Chretien, (Ottawa: n.p. 1973).

TABLE 7

Transport Canada Spending by Program and Air Transportation Spending by Northern Objective

	Actual 1973/74	Actual 1974/75	Forecast 1975/76	Planned 1976/77
	($000's)			
Financial Summary by Program:				
Air Transportation Program	17,896	21,986	27,953	37,941
Marine Transportation Program	16,253	18,508	19,855	23,218
Surface Transportation Program	85	60	35	-
Headquarters Program	2,154	808	1,232	1,893
Total Main Estimates	36,388	41,362	49,075	63,052
Add (Deduct) Net Adjustments	(7,834)	(7,448)	(6,467)	(7,758)
Annual Northern Expenditure Plan	28,554	33,914	42,608	55,294
Detail by Program:				
Air Transportation Program-to provide facilities and to foster the optimum development of the air mode of transport, consistent with the protection of the environment, on a cost-recoverable basis to the maximum practicable extent.				
Main Estimates	17,896	21,986	27,953	37,941
Add (Deduct) - Sales to Other Reporting Agencies	(1,103)	(1,282)	(1,410)	(1,629)
Annual Northern Expenditure Plan	16,793	20,704	26,543	36,312
Expenditure by Northern Objective:				
Economic Growth	11,755	14,493	18,580	25,419
Quality of Life	5,038	6,211	7,963	10,893
	16,793	20,704	26,543	36,312

Source: Annual Northern Expenditure Plan 1976/77
Advisory Committee on Northern Development
Minister Indian and Northern Affairs

training and fundamentally to give them mobility and freedom of choice.

Community Characteristics of the Arctic Air Facilities Policy

In the light of the preceeding comment on the basis for the relationship between the Arctic Air Facilities Policy and community life in the Keewatin it is useful to identify the actual linkages which exist between the Policy and the Arctic communities it is meant to serve. Essentially the Policy[135] provides for an upgrading of airport facilities to improve the quality of the air service received at most settlements in the Arctic. The Policy recognizes the harsh climate which is part of the Arctic reality by providing facilities such as extensive runway lighting, rotating beacons and weather services. Also the Arctic Air Facilities Policy allows, at many sites, the use of larger, more efficient aircraft by providing increased runway lengths. By supplying improved navigation and landing aids the Policy increases the potential for a safe, reliable and less costly, air transportation system. Finally by supplying facilities such as passenger terminal buildings, the Policy provides for the comfort of the users of the air transportation system.

While these improvements obviously are of benefit to Arctic air carriers they also offer the potential for a wide range of advantages to accrue to the people living in the Arctic. In fact a number of provisions of the Policy take as their main focus the communities in the Arctic rather than other points of view such as those of the air carriers. This is illustrated by the fact that the Policy provides for a complete pack-

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[135] See Appendix A for details of the Arctic Air Facilities Policy.

age of airport facilities for all Arctic settlements containing over one hundred people and having no means of regular transportation other than air. The Policy supplies these facilities to ensure that the communities may be provided with reliable, regular and efficient air services. This provision is significant in that it promises facilities which are often costly to Arctic settlements regardless of their economic prospects; the emphasis is thereby placed on community rather than other considerations. Also the package of facilities that a prospective community receives for its airport is determined by several community considerations such as population, community role, air service route structure and availability of other means of transportation. The stress is on the community rather than the air carriers or considerations of a purely economic nature.

The actual package of facilities that a settlement receives under the terms of the facilities policy is significant to that settlement in several respects. An Arctic "A" facilities package is provided for communities which are especially important to a particular region in either a resource, government or strategic sense. With regard to air transportation Arctic "A" airports have a special significance which is reflected in a number of ways. Firstly, these airports are to be operated and maintained by Transport Canada as opposed to the Territorial governments. Also the facilities supplied in an Arctic "A" package are superior, in the sense of the operational efficiency of air transportation itself, to those available in either an Arctic "B" or "C" facilities package. Specifically the Arctic "A" package provides for a longer runway, higher intensity runway lighting and improved weather forecasting along with an Instrument Landing System. The longer runway permits the operation of aircraft in the class of the Boeing 737. This class of aircraft in com-

parison with the aircraft designated for the "B" and "C" packages offers a number of advantages such as lower operating costs, longer ranges, greater carrying capacities and user features such as greater comfort, less travelling time and in general, a more reliable operation. However, the introduction of aircraft in the class of the Boeing 737 offers the potential of a less frequent air service and in fact this class of aircraft cannot be economically operated over short distances with small loads. In addition, the superior weather, lighting and approach aids described for an Arctic "A" airport increase the potential for a high level of air service from the standpoint of "regularity" and "reliability".

An Arctic "B" facilities package is designed for settlements with potential for economic growth and having some regional significance. Arctic "B" and "C" airports are to be operated and maintained by the Territorial Government. An Arctic "B" package essentially is different from a "C" facilities package with regard to the longer runway provided for Arctic "B" airports. This runway allows the operation of turbine-engined aircraft in the class of the YS11 which when compared to the class of aircraft permitted under the terms of the Arctic "C" facilities package offers the potential for lower operating costs, greater weight capacities and increased user features. In summary the three facility packages available under the terms of the Arctic Facilities Policy determines the type of aircraft and operational flexibility permitted for each Arctic site.

The Application of the Arctic Air Policy to the Communities of the Keewatin

By applying the Arctic Air Facilities Policy to the communities of the Keewatin it is possible to illustrate the fit that exists between

the Policy and the realities of the Keewatin region. Rankin Inlet meets all of the classification characteristics for a "B" categorization with the exception that the community does not plan an active role in resource development. However due to its designation as the centre of government for the Keewatin its future does seem assured. This optimism seems to be supported by the fact that Rankin Inlet may be selected as the site for the high school to be built in the Keewatin and also the community could become the proposed capital of the Nunavut. With regard to the future use of air transportation in Rankin Inlet, forecasts are very optimistic. Based on these considerations there has been some discussion, most notably by Transair, about the possibility of Rankin Inlet being designated as an Arctic "A" airport. This possibility may become more substantial in the future if the Keewatin region as a whole should become more significant either in a resource or governmental sense.

Baker Lake meets all of the classification characteristics for a "B" categorization with the possible exception that the settlement does not function as an area administrative centre. From a developmental point of view the location of Baker Lake is significant. There are a number of mineral prospects that are being actively explored in the area. Also Baker Lake would probably function as a major staging and distribution centre if the proposed Polar Gas Pipeline was constructed through the western part of the Keewatin. Forecasts concerning the future use of air transportation suggest a moderate rate of increased usage. Coral Harbour also meets all of the classification characteristics for a category "B" facilities package with two exceptions, it does not function as an area administrative centre or play an active role in resource development. The well equipped airport facilities at Coral Harbour are due to

its strategic location for the purposes of defence, which saw the construction of the airstrip during the Second World War and the use of the airport during the Dew Line Operation. The fact that Coral Harbour has always had the most highly developed airport facilities in the Keewatin was probably instrumental in its categorization as an Arctic "B" facility. In addition, forecasts do suggest that there will be a moderate increase in the use of air transportation at Coral Harbour.

Eskimo Point is classified as an Arctic "C" airport site. However Eskimo Point fits the classification characteristics for an Arctic "B" facility with the exceptions being that the settlement does not serve as an area administrative centre or play an active role in resource development. This situation could change in the future if either mineral development was to take place in the interior or even if the Polar Gas Pipeline was constructed through the Keewatin. An optimistic view of the future of Eskimo Point seems to be supported by forecasts made of future use of air transportation in the settlement. The major constraint to the designation of Eskimo Point as an Arctic "B" airport is the fact that the community lies within one hundred and fifty miles from Churchill, Manitoba. The airports at both Chesterfield Inlet and Whale Cove have been designated as Arctic "C" facilities. The population at both of these centres is not increasing at the same rate as it is at the other communities of the region.[136] Also both of these settlements lie within fifty miles of Rankin Inlet. Whale Cove seems to be especially vulnerable in that its population is declining and the airport is located several miles from the actual settlement. The limited prospects for the future use of air transportation in both Whale Cove and Chesterfield Inlet can be supported by

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[136] See Table 1 on page 12.

actual forecasts of projected passenger traffic. Although the Policy provides flexibility in the interpretation of the particular package of facilities that a community should receive, the designations just attributed in this thesis to the Keewatin settlements are considered reasonably secure. With the exception of Coral Harbour and Eskimo Point it appears that the various designations are a reasonable representation of the socio-economic situation which exists in the settlements of the Keewatin. The Arctic Air Facilities Policy has been implemented to a partial extent in the Keewatin[137] - although its impact has yet to be realized. The fully implemented policy[138] will result in a number of changes in the airport facilities which presently exist in the Keewatin. These changes in turn, could potentially impact community life in the region in a number of significant ways.

Evaluation of the Effect of the Arctic Air Facilities Policy on the Communities of the Keewatin

To fairly evaluate the Arctic Air Facilities Policy as applied to several settlements in the Keewatin, it is necessary to view the situation from a number of different perspectives. The primary task of the Policy upon which all others depend is to improve the quality of air transportation in the Keewatin. The Keewatin air carriers with their intimate contact and experience with air transportation in the region should be highly qualified to comment on the possible effect that the fully implemented facilities policy would have on the reliability, regularity and efficiency of air service in the region. An additional but related issue concerns

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[137] See Table 26 in Appendix B.

[138] See Table 27 in Appendix B.

the opinions of the air carriers about whether or not additional policies are needed to augment those enunciated in the Arctic Air Facilities Policy. A second perspective about the Policy can be gained by identifying the users and ascertaining their views concerning air transportation in the Keewatin. Since air service is the only means of year round transportation available, it is vital that the needs of users be given special consideration. In addition to serving users, such an emphasis would improve the utilization of air facilities. Finally, it is worthwhile to attempt to anticipate future users of the air transportation system and suggest ways that the Policy could meet previously unfulfilled needs.

A second major criteria for the assessment of the Arctic Air Facilities Policy concerns its impact on the economic growth and quality of life in the Keewatin. With regard to economic growth there are a number of approaches which can be used to judge the impact of the Policy. The construction and operation of the airport along with air carriers and airport tenant activities are expected to be the potential source of any employment directly generated by the Air Facilities Policy. Also the Policy could stimulate economic activities apart from the airport. The Arctic Air Facilities Policy could serve as a catalyst for economic development in the region. It is possible to estimate in an approximate manner the amount of income that the Policy might generate in a particular year for the Keewatin to provide another measure of the contribution of the Policy to the area. Another perspective from which the Policy can be studied is that of the Cost of Living in the Keewatin. By analyzing the impact that the Policy may or may not have on this critical aspect of Keewatin life one is provided with an excellent measure of the Arctic Air Facilities Policy. With regard to the quality of life in the Keewatin the Policy can

be evaluated with several aspects in view. The impact of the Policy on the way of life that presently exists in the Keewatin is a most useful criterion. Central to this criterion are the differing views of the Inuit and white population of the Keewatin. Finally an assessment of the potential impact that the Policy could have on the psychological needs of both the white and Inuit populations is useful in defining the merits and limitations of the Policy in human terms.

Evaluation of the Policy in the Keewatin is complicated by several factors. Of critical importance is the fact that there is a variety of perspectives from which the Arctic Air Facilities Policy can be evaluated. The points of view represented by the federal government, the Inuit and white populations are sometimes difficult to ascertain as well as coalesce into a suitable evaluation framework despite their obvious relevance. Another factor which makes an evaluation of the Policy difficult in the Keewatin is the variety of the effects which could possibly ensue and the diffuse nature of some of these effects. Finally, this evaluation is complicated by the fact that there are several prospects for the region such as a land claim settlement, the construction of the proposed pipeline through the Keewatin and significant mineral development which, while it is of critical concern to the future of the area, will largely be determined outside the region.

The Evaluation presented in the next three chapters will be concerned with the following issues: the performance of the air transportation system, economic impacts and the impact of the Policy on the quality of life. The evaluation itself will be based on the criteria identified in this chapter. In trying to assess the Arctic Air Facilities Policy in terms of its applicability to the Keewatin it is important to remember

that the Policy has been partially implemented in the region. In fact the analysis was conducted with two settings[139] in mind so the effects could be clearly identified. The first is based on the air transportation system as it presently exists and the other views the Keewatin airports with the Arctic Air Facilities Policy fully implemented. The consequence of this approach will be a clear assessment of the impact of the Policy on the way of life which exists in the Keewatin.

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[139]See Tables 26 and 27 in Appendix B.

CHAPTER V

ARCTIC AIR FACILITIES POLICY EVALUATION: AIR TRANSPORATION PERFORMANCE

The air transportation system in the Keewatin offers several criteria by which the Policy can be evaluated. One of the most critical is the operation of air transportation in the Keewatin where various constraints are posed by the region. Also, the positions of both the air carriers and the users in the Keewatin are significant components of the total air transportation picture.

The Operation of the Air Transportation System in the Keewatin

In an operational sense the airport facilities presently located in the Keewatin[140] are inadequate in a number of respects. Due to the often adverse weather conditions and the difficulty of finding direction by visual reference to the ground there is an essential need for both enroute and approach navigation aids. The Non-Directional Radio Beacon (NDB) coverage[141] which can serve as both an enroute and approach aid for aircraft has only a limited range in the Keewatin. The Very High Frequency Omnidirectional Radio Range (VOR) is a more sophisticated navigation aid which has a limited coverage[142] in the region especially at

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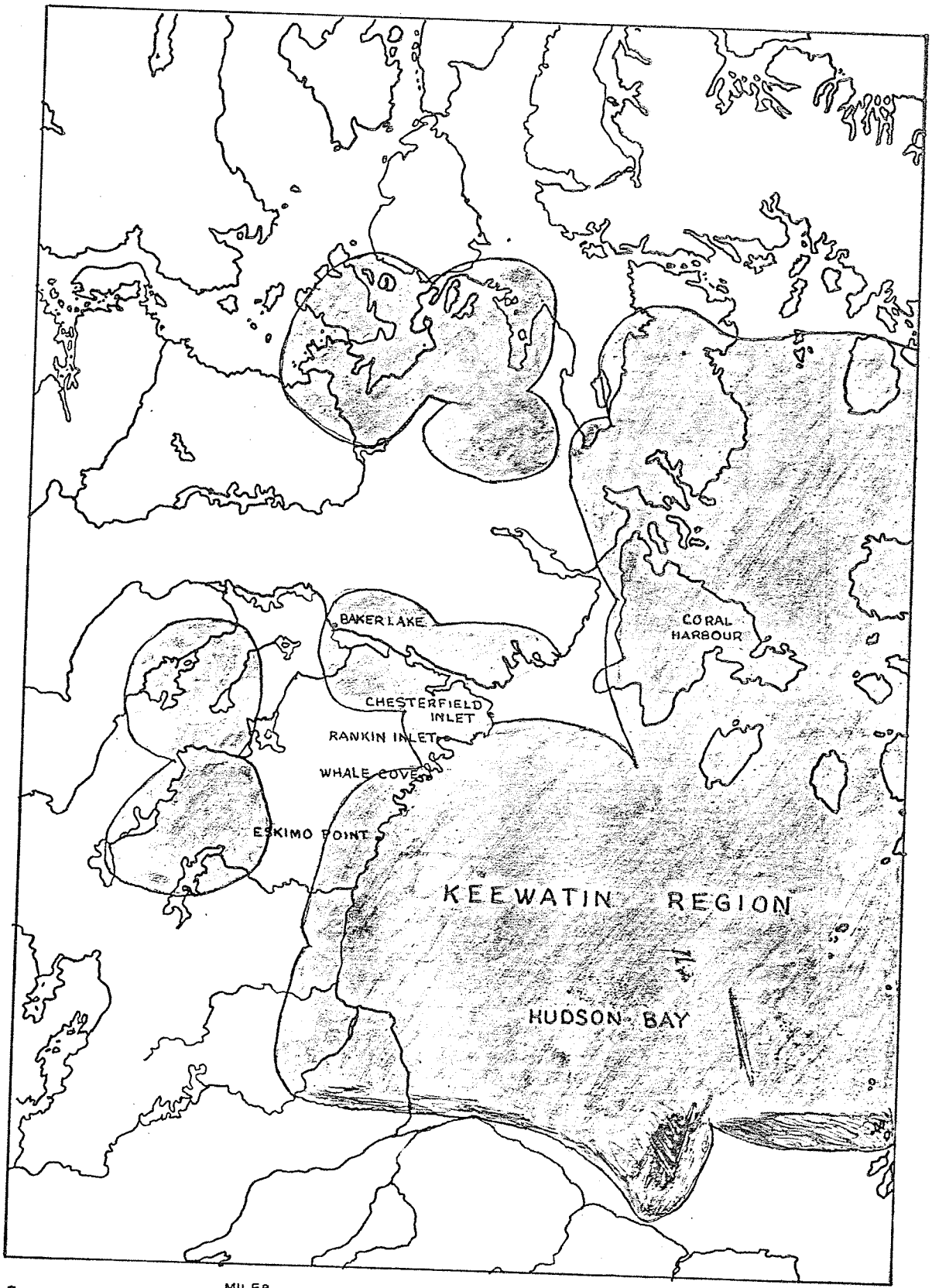
[140] See Table 26 in Appendix B.

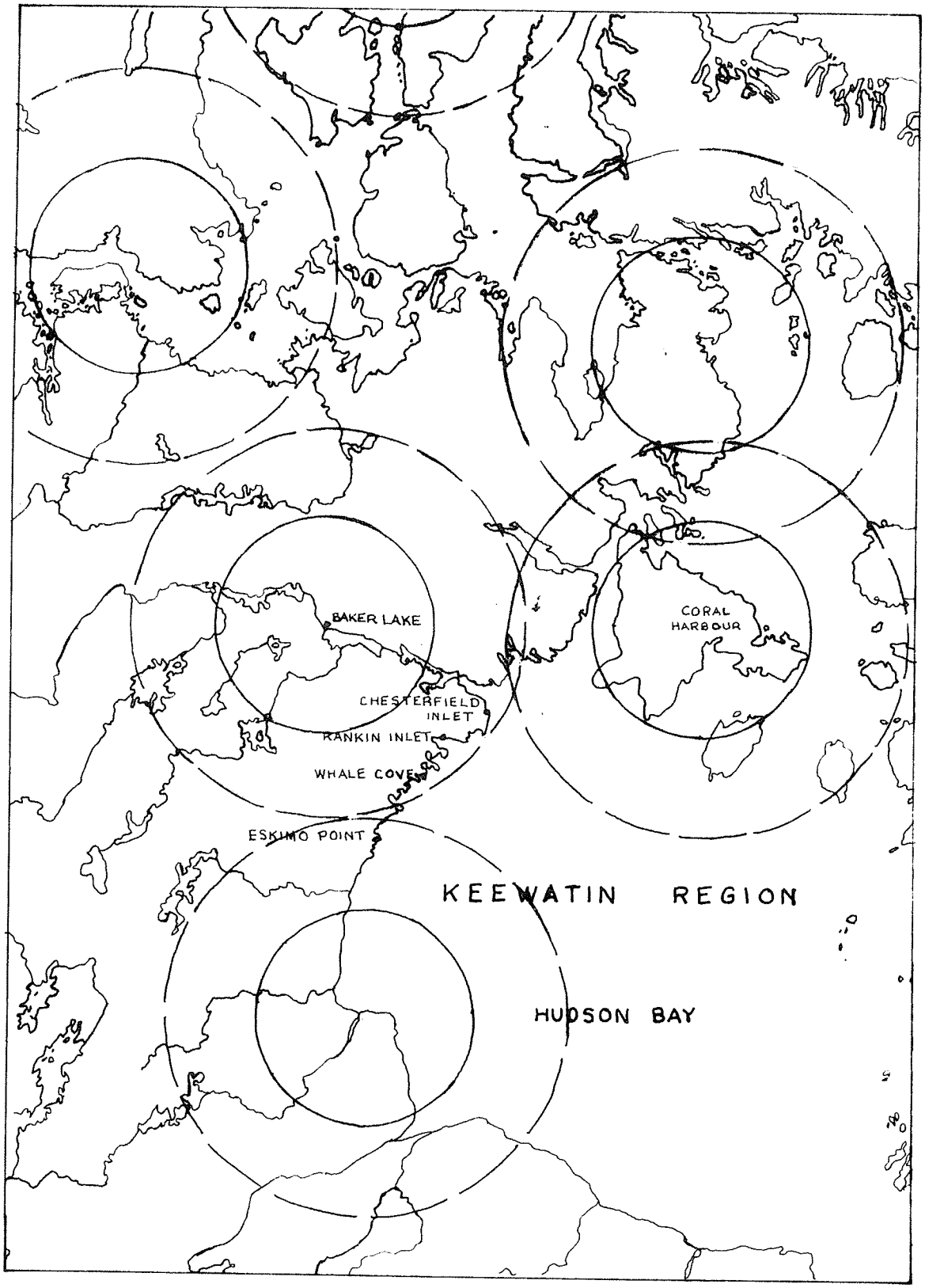
[141] See Figure 10 on p. 82.

[142] See Figure 11 on p. 83.



Source:
Transport Canada
Winnipeg

Fig. 10 NDB COVERAGE
IN THE KEEWATIN



Source:
Transport Canada
Winnipeg

Fig. 11 VOR COVERAGE
IN THE KEEWATIN

lower altitudes. In addition the lack of aeradio facilities, dependable weather information, and runway lighting all combine to limit air transportation in the Keewatin resulting in flight cancellations, delays, extra flying time, or the inability of the air service to operate.[143] These situations in turn mean higher operating costs for the air carriers, inconvenience and increased costs for the users and a greater potential for accidents. With regard to airstrip length there has been a considerable amount of work already accomplished under the terms of the Policy, especially at Rankin Inlet, while further work is required at Baker Lake. Longer runways lower the possibility of accidents and also allow aircraft with heavier load capacities to use the airstrip, thus increasing both the potential uses of air transport and the possibility of lower overhead costs for the air carriers. As far as ground facilities for the users of the air transportation system in the Keewatin are concerned there is practically no provision whether for passenger or other potential users of the system.

If one compares the facilities which would be provided of the Policy is fully implemented with those which presently exist, several improvements in both the number and the quality of these facilities are evident. With regard to navigational aids the Policy provides NDB's at each site and VOR/DME's to upgrade navigation information along major airways and air routes.[144] These facilities will provide both a higher level of enroute coverage and the potential for a greater approach capability for aircraft operating in the Keewatin. While it would be difficult to quantify the impact that these facilities would have on the

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[143] See Figure 9 on p. 64.

[144] See Appendix A, p. 151.

regularity, reliability and safety aspects of air transportation it is clear that a significant improvement would take place. However, in view of the fact that a fully installed VOR/DME facility costs at least $275,000[145] and the fact that a number of technologically superior navigation systems are available, it may be unwise to install VOR/DME's to fill the large gaps which presently exist in the Keewatin.[146] However with an improved weather service, airport lighting and aeradio capability, the potential for an improved air transportation operation in the Keewatin exists. While the implementation of facilities such as an Instrument Landing System at every airport site would further increase approach capabilities for suitably equipped aircraft, the fact that such a facility costs over $450,000[147] to install precludes such an eventuality.

The provision of increased runway lengths especially at Rankin Inlet and Baker Lake, the Policy permits aircraft in the class of the YS11 and F28 to replace the Twin Otter at these locations. Since aircraft in the class of the YS11 have greater weight capacities, longer ranges and an improved fuel utilization in comparison with the Twin Otter, the potential for additional cost efficiences is present. Also, the provision of fire fighting equipment, maintenance equipment, maintenance garage, fuel dispensing and storage facilities at each Keewatin airport, under the terms of the Policy, will support the air transportation operation.

The classification system used in the application of the Arctic Air Facilities Policy recognizes the existence of air transportation net-

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[145] Canada, Dept. of Transport, Five Year Plan, (Ottawa: Canadian Air Transportation Administration, November, 1976), p. 328.

[146] See Figure 11 on p. 83.

[147] Canada, Dept. of Transport, Five Year Plan, (Ottawa: Canadian Air Transportation Administration, November, 1976), p. 345.

works such as the Keewatin air system.[148] The varied facilities packages available under the terms of the A, B, C designation system permit the establishment of air network patterns such as the hub-spoke arrangement. Under this arrangement the Keewatin air network would be organized in a fashion whereby Rankin Inlet would receive an Arctic "A" facilities package[149] thus allowing aircraft in the class of the Boeing 737 to operate in the community. This class of aircraft would in turn provide Rankin Inlet with potential advantages in comparison with the other settlements in the Keewatin in terms of lower transportation costs and an increased transportation capacity. The hub-spoke arrangement does seem to have special applicability for the Keewatin due to its limited market and scattered settlement pattern. Furthermore, a number of authorities[150] looking toward the future have predicted that the hub-spoke air network will continue to be the most effective approach to air transportation in the Eastern Arctic, with Rankin Inlet and Frobisher Bay becoming the major hubs. The hub-spoke arrangement could thwart the classification system outlined by the Policy inasmuch as the major hub Rankin Inlet would increase its regional significance while the air transport needs of the smaller centres would be reduced.

Economics of scale could also work to reduce the number of aircraft, air carriers and air flights thus decreasing the need for facilities, especially in the smaller centres. The consequence of these developments would be pressure for the institution of a land based, all-weather

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[148] See Figure 8 on p. 60.

[149] See Table 27 in Appendix B.

[150] Canada, Department of Transport, Future Requirements of Transportation in Canada (1990), (Ottawa: Transportation Management Training Center, 1976), p. 3.

transportation system to replace the airport facilities at the smaller centres in the Keewatin. As far as the future of air transportation in the Keewatin is concerned it has been predicted that, while passenger figures will level off in the Arctic, the demand for air cargo will significantly increase due to a growing demand for consumer goods.[151] Thus, there will be a greater need for heavy carrying capacity aircraft with built in flexibility for either cargo or passenger loads. The use of this type of aircraft would likely increase the tendency toward a more centralized transportation operation in the Keewatin.

In summary, the Arctic Air Facilities Policy supplies a number of very expensive facilities which will encourage the development of an air service in the Keewatin with potential for improvement in its reliability and 'quality of service' aspects. The designation of Rankin Inlet as an Arctic "A" facility cannot be warranted on the basis of the classification criteria outlined in the Policy although from either an air service perspective or an air network point-of-view, a strong case could be presented for such a designation. The Policy as presently defined outlines facilities such as navigation systems which may be outmoded in terms of the demands of the air carriers and new technological developments. With regard to 'point to point' navigation the Omega or a Very Low Frequency (VLF) based system is expected to replace the VOR/DME as the accepted form of navigation in the Arctic.[152] Clearly the Arctic Air Facilities Policy provides a number of improvements which could upgrade the present air transportation operation. However there appears to be some incompatability with the policies and practices of the air carriers operating

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[151] Ibid., p. 22.

[152] Ibid., p. 27.

in the Keewatin and this aspect of the air transport situation will now be discussed.

While the upgrading of airport facilities described by the Policy is clearly aimed of improving air transportation services, the magnitude of the improvement in the Keewatin is somewhat more difficult to estimate. For obvious reasons air carriers operating in the Keewatin were elated with the first public announcement[153] of the Arctic Air Facilities Policy. In fact the view of the regional carrier, Transair, is that 'more and better' air and way facilities are highly desirable for the Keewatin. Furthermore, the Arctic Air Facilities Policy, according to Transair, should be implemented at a much faster rate.[154] The third level air carriers Calm Air, Lambair and Keewatin Air are mainly concerned with the 'day-to-day' profitability of their smaller operation. While they welcomed the impetus to air transportation provided by the Policy and the opportunity it gave the air carriers to upgrade their level of service, the implementation of the facilities policy in the Keewatin was expected to force the third level air carriers to improve their own equipment, thus placing financial pressure on the smaller carriers.[155] The precariousness of the profit position of the third level carriers makes them very sensitive to route structure pressures, operational regulations and the potential for subsidies.

Transair has a number of concerns about the application of the

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[153] The Winnipeg Free Press, 31 July, 1974.

[154] Interview with David O'Brien, Transair, Manager of Regulatory Affairs and Route Development, Winnipeg, Manitoba, 9 March, 1977.

[155] Interview with Al Craig, Transair, Winnipeg, Manitoba, 17 February, 1977.

Arctic Air Facilities Policy to the airports in the Keewatin. The air carrier questions the criteria used to determine the facility classifications in terms of how it could work out in the Keewatin.[156] The classification of Eskimo Point as an Arctic "C" airport does not coincide with Transair's[157] position; according to Transair in terms of route rationalization and profitability, Eskimo Point should continue to be part of their Keewatin operation along with Rankin Inlet and Baker Lake.[158] If Eskimo Point is to remain as a "C" category airport, the community will face a future of much higher air transportation costs and a lower level of service in comparison with those Keewatin settlements which will receive "B" category airports. This opinion is further underlined by the fact that Coral Harbour, which will receive an Arctic "B" facilities package, has less than half the population which lives at Eskimo Point and, also, has experienced less than half the percentage change in population that Eskimo Point has experienced since 1971.[159] Also, the community of Eskimo Point, along with Whale Cove, presently has a four thousand foot airstrip.

Transair operates a YS11 service in its Keewatin route but plans to replace this operation with Boeing 737 service within the next few years despite the fact that no community in terms of the Arctic Air Facilities Policy has an airport streamed to receive the facilities necessary to license this aircraft. The plan of Transair at this time is to stand-

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[156] O'Brien, interview.

[157] O'Brien, interview.

[158] O'Brien, interview.

[159] See Table 1 on p. 12.

ardize its equipment by purchasing new Boeing 737 aircraft to operate its Arctic service. This commitment to equipment procurement precludes further consideration of Dash 7 service within the Keewatin, according to Transair.[160] With regard to navigation, Transair is operating a Global Navigation System Facility called GNS500 on one of its Boeing 737's operating within the Arctic. This device, costing over $48,000, provides excellent navigational accuracy in all kinds of weather by taking advantage of both the Global Navigation System and the Omega Navigation System.[161] In summary, Transair has a number of plans which will set the pace for its future involvement in the Keewatin. The Arctic Air Facilities Policy, while playing a minimal role in these projected developments, could be affected in a negative fashion. This is reflected by the planned institution of Boeing 737 service in the Keewatin which, while offering some of the benefits to the region, would likely result in a reduction in the frequency of air service, thus defeating one of the major objectives of the Arctic Air Facilities Policy.

The market in the Keewatin for third level carriers is a very competitive one.[162] The air carriers involved are the charter carriers Lambair and Keewatin Air, and Calm Air which operates a scheduled Twin Otter service between Eskimo Point, Whale Cove, Chesterfield Inlet, Coral Harbour and Rankin Inlet. This scheduled service, initiated during the winter of 1976, has been plagued by a number of difficulties. The inadequate airport facilities at Eskimo Point, Whale Cove and Chesterfield

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[160] Craig, interview.

[161] Craig, interview.

[162] Interview with Jack Lamb, President of Lambair, Winnipeg, Manitoba, 16 March, 1977.

Inlet resulted in numerous, cancelled flights. Also, Twin Otter service is costly; an illustration of this is the fact that the fuel for the plane is purchased in Rankin Inlet at triple the rate at which it is sold in Churchill.[163] Furthermore, since a widely accepted slogan of Arctic air transportation is that increased safety means higher costs, the large overhead faced by air carriers such as Calm Air could place intolerable pressure on the ability of the air carrier to provide the safest possible service. The potential in such a situation was highlighted during late 1976 when one of Calm Air's Twin Otters crashed in the Keewatin due mainly to pilot inexperience. The very high operating costs involved in their Twin Otter service has forced Calm Air to raise its tariffs to a level which is substantially higher than those previously charged by Transair.[164] In light of the very high costs that are involved in purchasing equipment, such as navigational receivers, upgraded aircraft; to keep pace with the facilities being provided under the terms of the Arctic Air Facilities Policy, Calm Air strongly believes that subsidies will have to be provided if third level air carriers are to remain viable in the region.[165] Calm Air suggests that subsidies could be specifically provided for aircraft fuel.

While the third level air carriers operating in the Keewatin agree on the need for some form of subsidy, there is enthusiastic support for the establishment of a special policy for the third level air carriers operating in the Arctic.[166] The need for this policy may become more

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[163] Craig, interview.

[164] See Table 28 in Appendix B.

[165] Interview with Arnold Morberg, President of Calm Air, Rankin Inlet, N.W.T., 10 September, 1976.

[166] Lamb, interview.

apparent if the improved facilities in the Arctic begin to attract an increased number of air carriers to the region and thus heighten air carrier competition in the Arctic. A proposed third level policy, besides recognizing the unique constraints that an Arctic air carrier must face, could also rationalize the whole structure of air transportation that presently exists in the Arctic. The view of the third level air carriers in the Keewatin is that air transportation in the Arctic should be guided more by the principles of transportation economics[167] than by objectives of a humanitarian nature. From this perspective it is argued that socially desirable objectives could then be realized in a more efficient manner. It is a position that Transair is likely to support.

The Users of Air Transportation in the Arctic

The users of air transportation in the Keewatin are an essential ingredient in the evaluative process. In general, users in the Keewatin support the facilities upgrading taking place throughout the region.[168] Organizations such as the Inuit Tapirisat of Canada have taken the official position that airport facilities in the Keewatin must be improved.[169] However, in the past a number of bitter complaints have been made about the quality of the air service. One such opinion was reflected by an editorial in the April 5, 1974 edition of the newspaper "The Rankin Times" which was entitled "Curse you Transair??? No, Lambair." Evaluation of

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[167] Interview with Stan Caldwell Lambair, Winnipeg, Manitoba, 16 March, 1977.

[168] Williamson, interview held during Seminar, "A Remote People in the Path of a Pipeline", University of Manitoba, Winnipeg, Manitoba, 21 April, 1977.

[169] Ms. Annie Lock, Information Officer, Inuit Tapirisat of Canada, (Ottawa, February 1977), personal letter.

the Arctic Air Facilities Policy from the user's point of view requires a number of assumptions, as specific information is somewhat lacking. It is assumed that the views of the residents of the Keewatin at the present time are reasonably represented in the results of a user survey done in 1973/74.[170] Also, this information, although it is fragmentary can be used as a basis for assessing the Arctic Air Facilities Policy from the perspective of the Keewatin user.

The survey results[171] presented the following user concerns in order of their importance to the residents of the Keewatin: reliability and regularity, passenger and freight rates, information, facilities, equipment capacity, mail service, medical evacuations, competition and safety. It is significant that the major concern of Keewatin residents involved the quality of air service as opposed to the cost of the service. This indicates the importance of the 'regularity and reliability' aspects of air transport to the residents of the area and the fact that much of the traffic, especially passenger business, in the Keewatin receives some form of subsidization from either government or private business. High costs affect air transportation in the region by discouraging traffic of a non-subsidized nature, such as tourist travel and intercommunity transportation. As a group, the Inuit would most likely be adversely affected by the high cost of air transportation. The remaining concerns of the Keewatin users are tied either to the air service available or the provision of airport facilities.

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[170] Canada, Dept. of Transport, Joint Air Service Planning and Evaluation Review (Jasper), (Ottawa: Arctic Transportation Agency, March 1976) Appendix B-4.

[171] See Table 8 on p. 94.

TABLE 8

User Concerns in the Keewatin and The Arctic Air Facilities Policy

User Concerns* (listed according to expressed priority)	Details Concerning the Issue	Estimation of Arctic Air Facilities Policy Impact on Issue
1. Reliability and regularity	Reliability - schedules not being met for reasons other than weather Regularity - interval between scheduled flights	Improvement - Upgraded facilities will bring improvement - need for further policy statement
2. Passenger and freight rates	Higher operating costs in the Arctic, limited competition	Upgraded facilities will reduce operating costs. Improved equipment will reduce maintenance increase capital outlays required - need for further policies
3. Information	Publication of schedules, services, flight information	Upgraded facilities will encourage air carriers to promote their services - precedent set with community workshop held by Transport Canada
4. Facilities	Lack of passenger terminal bldg, warehousing other services	Improvement
5. Equipment Capacity	Aircraft and airport ability to handle various types of freight	Improvement resulting from potential created for better service
6. Mail Service	Reliability and regularity	Improvement resulting from potential created for better service
7. Medical Evacuations	Reliability, regularity of air service is crucial	Improvement resulting from potential created for better service
8. Competition	Vehicle to reduce costs, improve service	Reduce competition through potential created for upgraded facilities.
9. Safety	Facilities, air carrier service, pilot qualifications	Indirectly improved from potential created - need for policy statements to ensure safety among third level carriers

Source: *Appendix B
Joint Air Service Planning and Evaluation Review (JASPER)
Transport Canada 1976

The implementation of the Arctic Air Facilities Policy is likely to provide a constructive response to the user concerns already identified for the Keewatin.[172] The 'reliability and regularity' aspects of the air service could be improved to a large extent by the provisions of the Policy.[173] While the potential for lower transportation costs does exist this issue is dependent on a number of issues.[174] With regard to competition among the air carriers, the Policy might initially increase it but reduce it over the long term. The other user concerns of Keewatin residents are likely to be resolved to varying degrees through the implementation of the Policy. By encouraging the development of improved air transportation the Policy would probably increase both the uses of the air transportation system and the number of users of the system. An improved air service would result in greater use of the system for the transport of mail, purchase of various types of food and other provisions from other areas and the shipment of local produce to external markets. The Policy would likely encourage the growth of an east-west regular air service and also greater intercommunity contacts. These measures would increase traffic in the Keewatin by inviting increased participation by the Inuit. The most obvious way that the Policy provides for the users of the Keewatin is by provision of passenger/cargo terminal buildings at each airport location in the region. While these structures are important, user concerns are mainly centered on the issues of the regularity and reliability of service or the costs involved in ensuring that service. This fact suggests that the fulfillment of user needs in the Keewatin will largely

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[172] Ibid.

[173] See p. 61.

[174] See p. 63.

be decided by the performance of the air carriers.

Conclusion

The performance of air transportation in the Keewatin will be affected in a number of ways by the implementation of the Arctic Air Facilities Policy. In an operational sense the Policy will provide the potential for a significantly improved air service in terms of dependability, capability and cost efficiency. However the policies and practices of the air carriers have been determined independently of the Policy. In fact, in a number of respects Transair's future plans are at variance with the provisions of the Policy. With regard to the third level air carriers their situation is a somewhat tentative one in that the air transportation market in the Keewatin is both competitive and also faced with rapidly escalating costs. While the Policy provides in a number of ways for the needs of the Keewatin user, the realization of these needs will ultimately depend on the air service which will actually be supplied.

CHAPTER VI

ARCTIC AIR FACILITIES POLICY EVALUATION: THE ECONOMIC IMPACT ON THE KEEWATIN

A major function of the Arctic Air Facilities Policy is to provide economic and social improvement in the Keewatin. In an economic sense the Keewatin is an area lacking in viable developments and having an Inuit unemployment problem aggravated by a high birth rate along with a low skill and achievement level for wage employment. The employment that the Arctic Air Facilities Policy is expected to produce will result either directly from the implementation of the Policy in the various settlements or indirectly through economic activities generated because of the existence of the Policy. The construction and operation of the airport, the air carriers, and proposed airport tenant activities are expected to be the sources of any employment directly generated by the implementation of the Air Facilities Policy. Since the Policy represents a sizable investment of funds the Keewatin is likely to be affected in a financial way. Also the Air Facilities Policy is expected to have a positive effect on the cost of living in the Keewatin region. This chapter will concentrate on the economic aspects of the Arctic Air Facilities Policy namely: employment generated, financial impact, cost of living and, finally, economic development.

Employment Generated

The employment that the Arctic Air Facilities Policy is likely to produce will affect all of the settlements in the Keewatin. The construction and operation of the airports along with the activities of airport tenants such as the air carriers is expected to be an important source of new jobs which will directly result from the implementation of the Policy. While predictions of actual man years generated is a somewhat tentative exercise, especially for air carrier operations and airport tenant activities, such an attempt has been made.[175] The number of jobs that the Policy will be responsible for generating in each of the settlements will be somewhat limited. However those positions concerning both airport and air carrier operations are significant in that they offer the potential for the hiring and training of local residents for permanent employment.

With regard to airport operations, Transport Canada has organized programmes[176] to train northerners so they will be able to assume tasks which will be needed to operate Arctic "B" and "C" airports. Training is provided in the areas of airport maintenance, airport administration, weather observation and radio communication. The objective is to ensure that Arctic "B" and "C" airports will be fully operated by northerners. The fact that admittance to these training programs is limited to long-term northern residents preferably those of Inuit extraction illustrates

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[175] See Table 9 on p. 99.

[176] Donald Bedier, Western Region, Transport Canada, "Report on Arctic "B" and "C" Airport Maintenance Course Held at Coral Harbour, N.W.T., October 31 - November 10, 1976", Edmonton, Alberta, 18 November 1976. (Typewritten)

TABLE 9

Estimates of Local Employment Increase Directly Attributable to the Arctic Air Facilities Policy In the Keewatin (Numbers represent man years)

Airport Location	Classification Under Arctic Air Facilities Policy	Employment Increase Construction of Facilities	Airport Operations	Air Carrier Operations	Airport Tenant Activities
Baker Lake	B	10	0	2	> 5
Chesterfield Inlet	C	7	2	1	> 2
Coral Harbour	B	2	0	2	> 5
Eskimo Point	D	7	2	1	> 2
Rankin Inlet	B	12	4	6	> 5
	A	15	8	10	> 10
Whale Cove	C	6	2	1	2
Totals		59	18	23	> 31

Source: Construction Branch
Transport Canada
Winnipeg, Manitoba

the intent of the program. Also, the training itself has been especially geared to meet the needs of Inuit students by featuring such methods as practical on-the-job instruction.

The program has been well received in the settlements of the Keewatin as evidenced by the large number of applications received for the training courses.[177] Clearly this program is a highly significant endeavour for the Keewatin inasmuch as it seeks to train local residents for jobs which will actually be available in the communities and also the training is specially tailored to the people of the region. The results of this program are being montitored closely[178] as to their applicability to other employment areas both related and non-related to the airport.

While the Arctic Air Facilities Policy generates a certain amount of employment in its construction, operation and maintenance phases, very often Inuit employment is limited to relatively unskilled positions such as those of truck drivers and labourers while 'southerners' occupy the skilled, higher paying positions. The explanation for this situation lies in the fact that the Inuit population in the Keewatin lacks a great deal of the experience and training needed to perform jobs of a skilled nature. Also, the short term, seasonal nature of construction work in the region has tended to discourage the development of training or apprenticeship programs. The training program instituted through the Arctic Air Facilities Policy is a significant departure in this regard.

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[177] Lynn Bishop, Transport Canada, Edmonton, November 1976, personal letter.

[178] Ibid.

Financial Impact

The Keewatin is bound in a financial sense to be affected by the fact that the Arctic Air Facilities Policy represents an investment of over $15,600,000.00 in the region.[179] Almost 95% of this amount is devoted to capital expenditures for items such as structures, vehicles and specialized equipment which are transported to the region from southern Canada. Also included in the amount of money spent on capital expenditures is the cost of construction or installation of the various items involved. In terms of employment or income created, capital expenditures provide very little direct benefit to the Keewatin region. Since operating costs resulting from the Policy totals less than $800,000.00[180] the direct financial impact of the proposed facilities policy is likely to be somewhat limited especially since the Keewatin is lacking in both the resources and the capability to be a significant supplier of the materials needed to operate an endeavour such as the Arctic Air Facilities Policy. While much greater efforts could be made to use locally produced goods such as clothing, fish and meat products it is likely that the use of local employment is the most significant way that the Policy as budgetted could financially affect the communities of the Keewatin in a direct fashion. As illustrated in the preceeding paragraph there is a critical need for employment training in the Keewatin. Without a concerted effort in this regard a large part of the income available through the implementation of the Arctic Air Facilities Policy will continue to be earned by southern workers who are more likely to save their income rather than have it be-

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[179] See Table 10 on p. 102 and Tables 29, 30, 31, 32, 33 and 34 in Appendix B.

[180] See Table 10 on p. 102.

TABLE 10

Expenditure Breakdown for Keewatin Airports (in thousands of dollars)
Under Terms of the Arctic Air Facilities Policy

Category		Past Cost	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	Forecast Period	Total
Equipment	Capital	717.5	79.6	1859.1	1790.5	75.0			811.0	5332.7
	Operating Costs	102.0	64.5	84.2	177.9	3.0			8.0	439.6
Buildings	Capital	1183.1	449.8	66.0	355.0	349.0	110.0			2512.9
	Operating Costs	64.0	44.3	24.0	30.0	12.5				174.8
Vehicles	Capital	293.7	160.0	312.5	429.0	86.0			209.5	1490.7
	Operating Costs	5.0	.6	.6	37.2	6.7			4.0	54.1
Other Services	Capital	2596.1	660.0	1204.6	377.5	103.0			550.0	5491.2
	Operating Costs	63.0		7.0	46.9				5.5	122.4
Total		5024.4	1458.8	3558.0	3244.0	635.2	110.0		1588.0	15,168,400

Source: Five Year Plan, 1976
Transport Canada
Winnipeg

come part of the economic base of the settlements in which they are employed.

Cost of Living

There has always been an expectation that the implementation of the Arctic Air Facilities Policy in the Keewatin would reduce the high cost of living which exists in the region. The view that the upgraded facilities would result in lower air freight rates was based on the fact that the provisions of the Policy would considerably reduce the operating costs of the air carriers and encourage them to purchase larger, more efficient aircraft. The view was that the savings would be passed on to the consumer. Despite the existence of the Policy there is evidence that living costs in the Keewatin may not be reduced materially by the policy. The fact that three communities in the Keewatin under the terms of the Policy will continue to receive Twin Otter service should result in increasing rates at these locations. In addition, Baker Lake, Coral Harbour and Rankin Inlet are streamed to receive Arctic "B" facilities and this will not in the forseeable future allow aircraft to operate which will achieve significant economics compared to the YS11 service that presently serves these centres. These economics could be achieved if Rankin Inlet was elevated to an "A" category airport or if a sort of STOL Boeing 737 is developed to use 5000 foot runways. However, at this time, the costs of air transportation will probably continue to rise as evidenced by the Calm Air Tariff Proposal which was recently approved.[181]

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[181] See Table 28 in Appendix B.

The Hudson's Bay Company, which is the largest retailer in the Keewatin with a store in every community of the region with the exception of Whale Cove, sends a majority of its freight by the sealift. Perishables such as bread, dairy products and so-called 'junk food' - potato chips, pop, chocolate bars etc... are flown into the Keewatin under a contract with a Churchill based company called Rand Expediting Ltd. which in turn sub contracts the transportation of the freight with an air carrier. The consumer in the Keewatin pays the full cost price for any 'junk food' which is flown into any Hudson Bay store in the region.[182] Other goods flown into the settlement are priced at the same rate as that charged supplies brought in by the sealift. From the analysis presented above it appears unlikely that the cost of living will be affected in a significant way by the provisions of the Arctic Air Facilities Policy.

Economic Development

With regard to economic development in the Keewatin a number of prospects are possible. The exploration and development of the mineral potential of the area could be encouraged through the provision of the Arctic Air Facilities Policy. The Policy states that the application of the classification criteria for designating facilities for airports must be flexible due to changing circumstances such as resource exploration and exploitation.[183] The facilities policy could thereby encourage mineral development in two ways. Firstly, through the upgrading of facilities at airports that already exist in the Keewatin there is the potential for

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[182] Interview with Mr. Spracklin, Manager of Northern Stores, Hudson's Bay Company, Winnipeg, 15 February, 1977.

[183] See Appendix A, p. 143.

the establishment of infrastructure which could intensify exploration work in the region. These upgraded airports could serve as integral parts of a Keewatin transportation system set up to transport mineral ore, equipment and people either to or from mineral operations taking place in the interior. Secondly, the Policy, as specified earlier, could provide airport facilities in the Keewatin interior to allow mineral development to take place. During the last few years ten major mining companies have become involved in mineral exploration work in the Keewatin. Participation of the Inuit in these developments[184] has become a matter of some contention between the companies, Inuit organizations and the various governments involved. The issue has abated temporarily as a result of a government moratorium on mineral exploration and development in the Keewatin effective until 1978. Until that time discussions among the involved parties are expected to concentrate on the establishment of a meaningful role for the Inuit in the future development in the Keewatin.

Since it is likely that the Polar Gas Pipeline, if approved by the federal government, will be constructed through the western part of the Keewatin[185]; the Arctic Air Facilities Policy could serve in the same manner as it would to facilitate mineral development in the region. Additionally the consortium involved in promoting the Polar Gas Pipeline has placed a great deal of emphasis on nurturing close working relationships with the various Inuit organizations in the Keewatin.[186] In fact the Polar Gas

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[184] Interview with L.R. McDonald, Assistant Manager of Exploration for the Eastern District, Cominco Ltd., Toronto, 31 May, 1977.

[185] John D. Houlding, President and Chief Executive Officer, Polar Gas Project, "Notes for a Statement to Sub-Committee on Indian Affairs and Public Lands Committee on Interior and Insular Affairs", Washington, D.C., 5 April, 1977. (Typewritten)

[186] Interview with Paul Knechtel, Supervisor, Community Relations, Polar Gas Project, Toronto, Ontario, 1 June, 1977.

Consortium has taken the public position that a land claim settlement with the Inuit is both a desirable and expected course of action in the Keewatin.[187] While the terms of a land claim settlement remain to be resolved it is likely that a final settlement of this issue will contain guarantees for significant ongoing participation of the Inuit in the development of the Keewatin along with the provision of funds to encourage this participation. In addition, the expressed desire of the Inuit to remain in the region is compatible with this prospect. The investment capital generated by a land settlement along with the potential role that the upgraded Keewatin air transportation system could play in the economic development of the region, could be the growth dynamic needed to quarantee the economic future of the area. With regard to the present level of economic activity the Policy would likely encourage an increase in the fishing, tourist and craft industries in the Keewatin through the provision of a regular and reliable air service. However growth in these particular industries would depend to a large extent on greater government initiatives in these areas rather than through the implementation of the Arctic Air Facilities Policy.

Conclusion

In terms of direct economic impact, the Arctic Air Facilities Policy is not likely to be a major influence in the Keewatin. However the focus on training and local hiring is a positive aspect of the policy implementation which could set a significant precedent for future developments in the region. The sizable investment represented by the Arctic Air Facilities Policy cannot be justified in terms of the direct financial

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[187] Houlding, Notes for a Statement.

impact that it will have on the region or even on the cost of living in the Keewatin. Furthermore, while the Policy will increase the potential for economic development in the region, the relationship between the Policy and economic development in the Keewatin is a somewhat tenuous one.

CHAPTER VII

ARCTIC AIR FACILITIES POLICY EVALUATION: IMPACT ON THE QUALITY OF LIFE IN THE KEEWATIN

A subtle but important objective of the Arctic Air Facilities Policy is to improve the quality of life of the people living in the Arctic. While the term 'quality of life' can be interpreted in many ways this thesis will examine it from the perspective of life style and the psychological needs of northerners.

Life Style

Since the economic aspects of this issue can be included within the context of the 'cost of living' the examination of lifestyle will limit itself to some of its non-economic implications. By examining issues such as medical care, education and law enforcement it is possible to assess the potential impact of the Policy on some critical aspects of the life style in existence in the Keewatin.

With regard to medical care there is a great dependence on air transport because there is no resident doctor or hospital in the Keewatin so that any person requiring examination or treatment beyond the resources of the nurses and nursing stations located in the region is "evacuated" either by charter or scheduled air transportation to either Churchill or

Winnipeg.[188] Also, general practicioners, ophalmologists, pediatricians, respirologists, psychiatrists, dentists, dental therapists and medical administrators depend on scheduled and charter air services to spend varying lengths of time in the settlements of the Keewatin.[189] The inability of a flight to land or depart from a community can result in a number of serious problems. Delay may mean death, aggravation to a medical problem or at least increased suffering to a patient requiring specialized treatment. Also, missed appointments and rescheduling of surgery create additional difficulties in Churchill or Winnipeg. Because of the lack or at least poor quality of passenger accommodations at the airports increased hardship has to be faced and this often means increased expense for taxis and overnight costs in the communities. This difficulty is further exacerbated at Coral Harbour and Whale Cove because their airports are located several miles away from the communities. Finally the lack of heated storage facilities at the airports result in the freezing of clinical specimens in the mail going out or drug packages going in thus often rendering them useless.[190] It is obvious then that the provisions of the Arctic Air Facilities Policy aimed at improving the reliability and regularity of air service will dramatically alleviate the present situation. Also the provision of passenger terminal buildings and heated storage facilities will also indirectly improve the quality of medical care available to the residents of the Keewatin.

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[188] Ms. V. Bowly, Zone Director, Keewatin Region, Medical Services Branch, Department of Health and Welfare, Churchill, Manitoba, February 1977, personal letter.

[189] Ibid.

[190] Ibid.

During the last few years education has become an issue of major consequence in the Keewatin. Discussion has been concerned with the location of new schools, the organization of a curriculum to provide instruction in practical home making and employment skills and especially the possibility of using education to stop the deteriorating lifestyle of the Inuit.[191] At the first meeting of the National Inuit Council on Education held during April, 1977 these concerns were reaffirmed.[192] Each settlement in the Keewatin Operates a school which presents programs of study up to the end of the Grade Nine level with the exception of Whale Cove whose senior students must attend school elsewhere.[193] As mentioned earlier there is no high school in the Keewatin. As a result there are approximately seventy students attending high school in either Yellowknife or Frobisher.[194] Also there are several students attending school in Ottawa. There are sixteen students attending university or community colleges in Fort Smith or in southern Canada.[195] The Keewatin education system faces a number of constraints in its efforts to fulfill the future needs of the area. The inadequate transportation system discourages communication about the type of education that is being provided and thus gives local residents little control over the type of education being pro-

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[191] N.W.T. Legislative Assembly, Council of the N.W.T. Debates, 60th Session, 8th Assembly, 18 October, 1976, 1976, p. 29.

[192] Inuit Cultural Institute, "press release on meeting of National Inuit Council on Education", Eskimo Point, N.W.T., 22 April, 1977. (Typewritten)

[193] See Table 35 in Appendix B.

[194] Ms. L. Langlois, Administrative Officer, Dept. of Education, Keewatin Region, Rankin Inlet, February, 1977, personal letter.

[195] N.W.T. Legislative Assembly, Council of the N.W.T. Debates, 60th Session, 8th Assembly, 20 October, 1976, p. 108.

vided. Also the high turnover rate of qualified staff endemic to northern areas adversely affects the quality of education being presented. The fact that students or adults wishing to continue their education beyond the Grade Nine level have to leave the Keewatin has discouraged people from seeking such training with the consequence that there are plans to establish in the near future a high school in the Keewatin. In addition there will be increased pressure to centralize educational facilities as sophisticated and costly equipment is purchased to improve education in subjects such as home economics, technical shops and employment skills. The upgrading of facilities prescribed by the Arctic Air Facilities Policy could work to alleviate these constraints. As the Keewatin becomes more accessible to southern Canada, it also may become more attractive as a place of permanent residence for prospective teachers. The establishment of a 'reliable and regular' air service in every community of the Keewatin could make possible a commuter type arrangement whereby students could receive advanced training without being totally isolated from their home environments and the people of the Keewatin could exercise some control over the education being presented.

The crime rate in the Keewatin is large considering the size of the population located within each Royal Canadian Mounted Police Detachment area.[196] Most of the crime is of a non violent nature and there does not seem to be a pattern of increasing crime emerging in any of the Keewatin detachments. The RCMP rely on air transportation to deliver prisoners, Justices of the Peace and themselves to and from the settlements. The rate for actual crimes solved is high except perhaps for Rankin Inlet,[197]

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[196] See Table 36 in Appendix B.

[197] Ibid.

this indicates a high degree of law enforcement when one considers the distances involved and the undependable system of air transportation available. One point of view about the proposed impact that the Policy would have on an area like the Keewatin suggests that the crime rate would rise significantly as one of the logical consequences of the implementation of the policy. However this view cannot be justified on the basis of the evidence, as the Rankin Inlet detachment does not indicate an upward trend in crime despite the fact that this community has experienced the largest growth rate in the Keewatin since 1971 and during the last two years has received a great deal of facility development under the terms of the proposed facilities policy. In effect the Policy would improve the accessibility of law enforcement to all of the Keewatin settlements thus reducing the possibility of an emergency situation whereby a community requiring law enforcement assistance would not be able to receive it.

The fact that the Policy has the potential to 'open up' the region to a number of services and products presently not available, could be of immense significance to the Keewatin. While medical, educational and law enforcement services would be improved, an increased potential would exist for the introduction of new services such as temporary clinics to provide counselling in subjects such as marriage, family planning, food preparation, basic hygiene and government bureaucracy. Also recreation and socializing in the settlements could be improved through the increased availability of films, guest speakers, cultural displays and professional entertainment. The arrival of newspapers the same day of printing in Winnipeg or Yellowknife and the availability of current issues of magazines could help to relieve the intellectual boredom and isolation sometimes experienced by residents of the Keewatin. The availability of a regular mail service could also increase the number of potential ties between the region and other parts of Canada or the world. The Policy could lead to

an improvement in the diets of local residents through the provision of fresh foods such as dairy products, vegetables and fruit. These products in turn could lead to an improvement in the health of residents for instance in the area of dental care clearly the provisions of the Policy could potentially open up the Keewatin to a wide array of influences which in effect could change the 'quality of life' in the region.

In summary, the Policy could result in an enhanced life style for both the Inuit and white population especially in terms of medical care and education along with the provision of a variety of goods and services. This view is further supported by the fact that the Policy represents a positive response to the psychological needs of the residents of the Keewatin.

Psychological Needs

This term is difficult to define in a precise manner for the people of the Keewatin due to a number of reasons. The most obvious concerns the fact that a large part of the population is Inuit while the remainder is white. Because of the very different background and socio-economic realities - as documented in numerous tables in this thesis - which exist between the white population and the Inuit in the Keewatin it is reasonable to expect that their needs especially psychological ones would be quite different. However, there has never been a systematic attempt to document the opinions of Keewatin residents concerning their hopes and aspirations. While the vehicles for this kind of expression seem to be emerging - in the form of local government participation, cultural and political organizations - attention has not yet been given to measuring the attitudes of the people about the future. Concerning the Arctic Air Fa-

cilities Policy a number of settlement workshops have been held but these gatherings have been mainly concerned with informing local residents about matters such as the operation of the proposed airports. With regard to the Northern Territories a number of studies have been carried out by psychologists and mental health experts on subjects such as mental health and the adjustments being made by Northerners to their changing environment.[198]

One such study, entitled, "Project Mental Health: A Study of Opinion North of 60°" analyzed mental health issues throughout the whole of the Northwest Territories in the early 1970's. The final report makes a number of points which are especially relevant to this thesis. It is suggested that the Inuit perceive life in less optimistic terms, find life less rewarding and thus require more assistance for physical, social and mental problems when compared with the white population. The 'fairly strong' existence of anxiety and depression or the so-called 'cabin fever' in the white population especially during the long winter months was also evident. The study found that the great majority of the people in the Arctic want and expect the same fundamental services and facilities such as health services, recreational opportunities and transportation that are available in southern regions. This Mental Health Study did not specifically seek out explanations of the disorientation that it found among northern peoples. The maladjustment of the white population can safely be attributed to the cultural shock that the Arctic environment and style of living often poses for them; however the explanation for deviance among the Inuit is a more perplexing issue. While there is general agreement

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[198] MacKinnon and Neufeld, Project Mental Health: A Study of Opinion North of 60°, p. 2.

about the cause of cultural disintegration among the Inuit there is much disagreement about relevant solutions. One view would suggest that the Inuit and their culture will continue to disintegrate as long as the whites and their southern culture continue to impinge upon life in the Arctic. Another point of view would involve the wholesale absorption of the Inuit into the mainstream of Canadian society. A middle view would encourage the introduction of support mechanisms to enhance the Inuit and their culture.

With regard to the so-called middle view, the Inuit and their culture could be strengthened because of the implementation of the Arctic Air Facilities Policy. The fact that the Policy specifies that Category "B" and "C" airports are to be operated by the Territorial governments will help to further the development of self-government among the settlements of the Arctic. The fact that settlements with populations of at least one hundred people are streamed to receive facilities at considerable cost, regardless of the economic prospects that the community may have is another way that the Policy does enhance community life. This has special reference for the development of local leadership and responsibility in the settlements since the vast majority of local councillors in the Northwest Territories are Inuit; i.e. in Rankin Inlet all of the hamlet councillors are Inuit except one.

As mentioned earlier the potential for year round intercommunity travel in the Keewatin will exist for the first time in its history. In a Sessional Paper entitled "Recreation North" presented by David Flynn on April 30, 1974, before the Council of the Northwest Territories the point was made that an improved transportation system would unify the North and lead to increased pride in individual communities. Also the up-

grading in the proposed facilities in the Keewatin will encourage the establishment of an east-west air service which could lead to greater Territorial intercourse as opposed to the north-south orientation of travel which presently exists. Through this improvement in Territorial communication the potential for interchange between the communities, of a political, cultural and social nature, would exist. This development could, in turn, lead to a strengthening of the Inuit way-of-life in the Arctic. Finally, the implementation of the Arctic Air Facilities Policy in the Keewatin could provide the impetus needed for a resolution of the Inuit Land Claim which in turn could quarantee the future of the Inuit and their culture in the Keewatin.

With regard to the psychological needs of the whites this group could also benefit from the increased potential for self-government and intercommunity travel which could in turn encourage the development of greater local, regional and territorial allegiances. These ties if combined with the other amenities outlined earlier could serve to keep and perhaps even increase both the number of white people willing to live in the Keewatin and their particular commitment to the region.

Conclusion

While the measurement of a term such as 'quality of life' is open to a variety of interpretations it seems clear that the economic and social impact of the Policy on the Keewatin offers significant promise for the residents of the region. Improvements in medical care will provide obvious advantages, while increased participation in education and local control of the residents over education would be of great significance for the future. By improving the air transportation system and providing

the opportunity for an upgrading of the life style in a material sense, the needs of the white population will be recognized. Also, through improving economic possibilities in the region, the Policy could be a critical determinant with regard to the future of the Inuit in the Keewatin. Furthermore, the prospects for the future could actually be enhanced through the potential that would exist for increased social, cultural and political contacts between the scattered communities in the Arctic. By responding to the psychological needs of the white and Inuit population of the Keewatin, the Arctic Air Facilities Policy will in effect encourage these groups to play a meaningful role in the future of the region.

CHAPTER VIII

DEVELOPMENTAL ALTERNATIVES FOR THE KEEWATIN REGION

Further definition of the impact of the Arctic Air Facilities Policy on the communities of the Keewatin can be achieved by comparing and contrasting two alternatives; the first will examine the Keewatin in the absence of the Policy while the second will specify and consolidate the effects of the Policy as presented in the preceeding analysis. This presentation of alternatives will be followed by critical comments on the strengths and limitations of the Arctic Air Facilities Policy when fully implemented. Since the Policy has already been partially implemented presentation of the first alternative will require hypothetical treatment. Examination of the second alternative requires, of course, difficult evaluations where some major imponderables are involved.

The Keewatin Region Without the Arctic Air Facilities Policy

The Keewatin would be fundamentally different if the Policy were not implemented in the region. The limitations of the air transportation system identified earlier would be perpetuated with an accompanying restriction on the way of life in the Keewatin. Even more serious is the fact that community circumstances would probably deteriorate still further as a result of conditions external to the region which would nevertheless have implications for the Keewatin.

Without the Policy the air transportation system would continue

to be subject to a number of constraints posed by the area such as the weather, distance and the limited air transport market. Predictably the weather in the Keewatin would sustain a number of problems for the air transportation system such as cancellations, delays, extra flying time and crashes. The great distances between airports in the Keewatin would probably result in a large number of lost aircraft and subsequent accidents. Due to both the distance and the limited market in the Keewatin, air transportation would be reduced with regard to both the frequency and the quality of air service being provided.

The facilities that would be available at the airports if the Policy were not in operation would do little to offset the basic constraints on air transportation already identified. An inadequate number of navigation aids would provide a minimal amount of both enroute and approach assistance for aircraft operating in the region. A poor communication system lacking up-to-date weather information would prevent suitable preparation from being made for flights into the Keewatin. Without the Policy, airstrips in the region could be characterized as too short, poorly equipped and inadequately maintained and air transportation would be affected in several respects. Most importantly these airstrips would be inoperable during adverse weather conditions. Also, due to their short lengths, the airstrips could only be used by smaller aircraft. Finally, because of their inadequate condition, there would be a greater potential for accidents to occur. The lack of airport facilities such as maintenance garages, fueling and fire fighting equipment would also serve to restrict the ability of the air transportation system to function effectively in the Keewatin.

The effect of the operational deficiencies would be a weak air transportation system in the district with limited externally generated

air traffic and stagnating air carrier operations. Both Transair and the third level carriers would be operating an air service constrained by inadequate facilities and undependable and costly to the users. With inadequate ground facilities the carriers would likely operate aircraft such as the DC-3, equipment which is not well suited to operation in the Arctic. This older equipment along with the inadequate airport facilities would pose a threat to air carrier safety in the Keewatin.

With a severely limited air transportation system the Keewatin would be confirmed in the pattern of a region faced with a deficient economic development and a rapidly increasing, but economically and socially disadvantaged, Inuit population. The small but functionally significant white population would be undergoing a high rate of turnover as a reflection of their dissatisfaction with life style available in the Keewatin. The communities in the Keewatin would have both a high cost of living and a large unemployment problem which would principally affect the Inuit rather than the white population with their large salaries and high degree of mobility. Due to the limited economic base in the Keewatin the source for much of the funding to support the settlements would be provided on a dependency basis by government. With respect to economic prospects the construction of the Polar Gas Pipeline, mineral exploration in the interior, and a land claim settlement would be considered the most significant possibilities, but the role of air transportation would be a critical constraint. In essence the Keewatin without the Arctic Air Facilities Policy would be drastically limited. In time these difficulties would probably assume intolerable dimensions.

Based on the circumstances that existed before the initiation of the Policy it has been argued that the Keewatin would be a very limited

environment if the Policy were not introduced. Furthermore it is arguable that these circumstances are likely to deteriorate in the absence of the Policy.

Without the Policy Transair would likely have to re-evaluate its position with regard to the Keewatin. Transair would be further confirmed in its regional air carrier policies. Specifically, it would probably emphasize its typical regional carrier policies of fleet rationalization and modernization and system improvement through the abandonment of weak routes and accentuation of strong routes. Besides being a small part of the total Transair network the Keewatin would be a less profitable part of it. Also for Transair to continue its operation in the Keewatin the air carrier would have to use older, inadequate equipment which would conflict with attempts by the air carrier to rationalize its equipment. The choices available to Transair would involve abandonment of its Keewatin air service or else the provision of the service with inadequate equipment; either choice would have immense implications for the region. If Transair departed from the Keewatin it would be a serious blow to the future of the region because of the carrier's long involvement in the region and the fact that Transair provides valuable linkages between the Keewatin and the rest of Canada. Furthermore, if Transair did decide to remain in the area it is likely that the air carrier would seek to capture most of the air transportation market in the Keewatin leaving little business for the smaller carrier. The air service provided however would be both costly and poor in quality and subject to monopoly.

Without the Policy the third level carriers in the Keewatin would be vulnerable in a number of respects. Both the operational deficiencies and the reduced air transportation market that would be in existence would

impose a severe strain on their ability to remain viable in the region. Also, because of the limited financial strength of the third level air carriers it is unlikely, if Transair left the region, that the smaller operators remaining could maintain the level of service provided by the regional carrier especially for linkages with the rest of Canada. As mentioned, the third level carriers would likely receive a reduced part of the limited market available if Transair did remain in the Keewatin.

Due to the inability of the third level carriers to absorb continued financial losses the smaller carriers would be forced to devise methods to reduce their high operating costs. To ensure maximum loads and reduced operating costs it is likely that the air carriers would reduce the frequency of their flights or at least delay them on occasion to ensure a full load. Also the use of older equipment would lead to longer flying times and greater passenger discomfort. In a further attempt to lower costs the air carriers could cut back on safety precautions thus imperilling aircraft operation. Finally, the use of inexperienced personnel could lead to additional concern for operational safety. While these measures would likely be practised by the third level air carriers rather than Transair they would reflect the marginal nature of the air carriers operation in the Keewatin.

Without the Policy, the neglect of the needs of users in the Keewatin would assume increasing significance. The high costs involved in air transportation would likely restrict the number of users to those being subsidized such as government officials or those requiring transportation for essential reasons. The lack of facilities such as cargo/passenger terminals would restrict further the realization of the needs of users in the Keewatin. As a result the high costs, poor quality of service and the limited role

played by air transportation would likely focus complaint by residents and organizations in the Keewatin. Furthermore these complaints would become increasingly vocal as the air service continued to deteriorate. Certainly one of the most persuasive arguments that would be used in favour of an improvement in the air transportation facilities would concern the fact that without the Policy the Keewatin would be unable to realize its economic and social potential.

Lacking the Policy the Keewatin would be limited economically due to a number of considerations. The fact that air transportation would be unable to play a major role in potential economic developments would be significant. In addition the lack of a policy to upgrade airport facilities in the region would indicate a lack of confidence by government in the future of the Keewatin. Both of these considerations would discourage investor interest in the region and also dampen the enthusiasm for developments such as the Polar Gas Pipeline, mineral development and the Inuit land claim. In fact activities such as craft industry and commercial fishing would be reduced. With a reduction in the economic base both cash flow and employment opportunities would be reduced. In light of ever-increasing consumer demands and growing numbers seeking employment opportunities among the Inuit the potential for wide-ranging repercussions seems likely as the needs of the people are not realized.

The cost of living would continue to escalate in the absence of the Policy in the Keewatin. The greater inefficiencies that would be evident in the air transportation system of the Keewatin would increase this cost. Also the inadequate airport facilities would tend to increase the dependence on the sea mode which would in turn result in higher costs due in part to the need for new docking and storage facilities. The con-

sequence of a continual rise in the cost of living would be a varying one. For the white population this situation would be met with a suitable pay increase in light of the already substantial turnover rate. The Inuit would be affected in a more critical fashion due to the fact that this group has larger families, smaller incomes and a general reluctance to move to other regions. Substantial increases in the cost of living could result in a boycott of the products involved or greater investment in the marine mode. However due to the critical function which air transport serves in the Keewatin the likely outcome could be an increased demand for greater investment in the air transportation mode.

Certainly the quality of life in the Keewatin would be adversely affected by a situation which could be characterized as one with a deteriorating air transportation system and somewhat limited prospects for economic development. Restrictions that would be imposed on the availability of various services in the Keewatin would create a number of difficult conditions for both the Inuit and white populations. Without the Policy those requiring medical assistance in the Keewatin would face the possibility of inconvenience, hardship and even death due to the inadequate facilities and air service that would be available. Education would be inaccessible in terms of both its availability and its control by the people of the Keewatin. In addition law enforcement in the region would be restricted in its application if the Keewatin lacked the Arctic Air Facilities Policy. Furthermore restrictions on the availability of various goods would also limit the quality of life available. The import of nourishing foods such as dairy products, fresh fruit and vegetables would be discouraged thus affecting diet and possibly increasing health problems. An irregular, undependable mail service would reinforce the sense of isolation felt by

many in the white population plus inhibit further the functioning of government services in the region. In summary these restrictions placed on services and goods in the Keewatin as a result of the deteriorating air transportation system would reduce the quality of life available to the residents of the region.

In a psychological sense the white population of the Keewatin would be critically affected by the continued absence of a policy to upgrade airport facilities in the region. The group would be especially affected by the quality of air service that would be provided and the limits the available service would impose on life style in the Keewatin. Limits on goods and services would reinforce the view of the white population regarding the 'inferiority of the life style' in comparison to that available in southern Canada and further confirm the views of the white population concerning the isolation of the Keewatin. These views in turn, would increase the dissatisfactions felt, along with the amount of stress in the white population. Furthermore, since this group in large measure has always had a characteristic lack of commitment to long term residency in the region the rate of turnover would increase as the life style in the area deteriorated further. While this would result in higher administrative costs it also would disrupt the continuity of various services and programs in the Keewatin. In an effort to reduce the high turnover rates the only course of action available would be increased financial inducements. Besides becoming very costly these payments would arouse resentment in the Inuit community. Clearly this course of action would not be advantageous with regard to winning the allegiance and commitment of the white population to the long term development of the Keewatin.

If the Policy were not implemented, the Inuit population would

be adversely affected in a psychological sense. Considering the constraints to economic development and quality of life that would be imposed the Inuit way of life would be placed in serious jeopardy. The frustration of not being able to participate in the consumer society presented to them through mediums such as television could be a source of significant frustration to them. The consequence of this situation could be an increase in anti-social behaviour among the Inuit. In a cultural sense the Inuit would also be affected through the absence of a policy to upgrade airport facilities. The diminished role of air transportation would discourage the development of social, cultural and political contacts between the various Inuit communities scattered throughout the Arctic. Without these relationships the Inuit culture would likely become increasingly fragmented and subsequently disintegrate in the face of the numerous economic and social pressures being placed upon it.

Given the limited economic base of the Keewatin, the reduced prospects which would be available without the Policy and the fact that the Inuit population is increasing along with Inuit consumer expectations, the Keewatin would be faced with a number of alternatives concerning its future development.

One alternative could be identified as the "back to the land" view whereby the population especially the Inuit would rely on the land and the sea for their basic needs. This alternative would be impractical for a number of reasons. The land and sea in the Keewatin could not be realistically expected to support a fraction of the present population even if there was a willingness to do so which would be unlikely in view of the acquired tastes of the local residents for the various goods and services available in the settlements of the Keewatin.

Another alternative would limit the Keewatin to functional significance for large schemes devised outside of the Keewatin. While subsidization could be provided to quarantee a certain life style in the region there would be a number of drawbacks in this approach. The Keewatin, in effect would have little control over its own development and thus would be unable to shape prospective development to suit its own particular needs. In addition, the cost involved in subsidization could be prohibitive. Even if a sort of "artificial economy" was organized to provide an increasing number of jobs it would be a retrograde step in that once more the local economy would be controlled by forces external to the Keewatin. In light of the potential that would exist for the creation of a possible "welfare mentality" in the local residents, the local residents, organizations and governments involved would likely oppose this particular alternative.

Another alternative would involve the relocation of the population to more economically favoured areas. While this approach would not prove to be a problem for the small white population of the Keewatin it would be for the Inuit. As outlined earlier, there have been in the past various attempts made to relocate Inuit outside the Keewatin with little success being achieved. While this fact does not preclude further efforts in this regard it does suggest the challenge that is involved. It is likely that the overt promotion of a policy of 'encouraged depopulation' would be vigorously opposed by local organizations such as the Inuit Tapirisat of Canada which has a definite commitment to development in the Arctic and to the continued presence of the Inuit in the region. Furthermore the Inuit Tapirisat while promoting the idea of a land claim settlement also accepts the view that economic development and an upgrading of airport facilities in the Keewatin are essential features of the region's future. The pre-

ceeding analysis of the various alternatives available would further support this view. Clearly none of the alternatives presented would provide the opportunity for community centered development to take place in the Keewatin.

In summary the Keewatin would be limited in a number of respects by the continued absence of a policy to upgrade airport facilities in the region. This situation if extended over a lengthy period of time would create a number of critical problems for the Keewatin. In an economic sense the Inuit would be faced with a number of fundamental alternatives which would determine their continued existence and the form in which that existence would take. Lacking the Policy, life in the Keewatin would likely be regarded as intolerable to the white population as the region failed to keep pace with rising life styles available elsewhere. In essence if the Arctic Air Facilities Policy were not in existence for an extended period of time the way of life in the Keewatin would likely be affected to such a degree that considering the potential of air transportation there would be a growing demand for a comprehensive policy to upgrade airport facilities.

The Keewatin Region With the Arctic Air Facilities Policy Fully Implemented

An analysis of the impact that the Arctic Air Facilities Policy is expected to have on the Keewatin has already been presented. A recapitulation of the effects is useful however in order to facilitate comparison of the alternatives being considered, namely the Keewatin with the Arctic Air Facilities Policy and the Keewatin without the Policy.

On balance it appears that a fully implemented Policy would be favourable to the Keewatin. While implementation of the Policy would be

beneficial to the region it also would require a number of supportive measures to ensure full realization of its potential impact. More specific summary comment follows.

In an operational sense the full implementation of the Policy will provide navigation, communication and weather information to aircraft operating within the Keewatin. Ground facilities will assist aircraft operations and also provide for the needs of users. These facilities provide a number of benefits. They will considerably reduce the potential for a disruption of the air transportation system by adverse weather conditions. Also the facilities will lessen the possibility of aircraft loosing their direction resulting in potential accidents. In addition the Policy increases the potential for fuel savings. In essence the various facilities packages provided at the settlements will encourage the provision of a safer, more cost-efficient air transportation system.

The air carriers most notably Transair should be encouraged by the provision of facilities described in the Policy and this will probably be reflected in their increased commitment to the region. Transair can be expected to establish a regular service between Rankin Inlet and the communities of Frobisher Bay and Yellowknife. The air carrier will also exert pressure for the designation of Rankin Inlet as an Arctic "A" airport. Regarding equipment Transair will seek approval for both Boeing 737 service and a superior navigation facility than those provided for use in the Arctic Air Facilities Policy. Due to the fact that Eskimo Point is designated as an Arctic "C" airport due to its close proximity it is likely that Transair would give up this airport to Calm Air, the third level air carrier. As a result the communities of Rankin Inlet and Baker Lake would be the only communities in the Keewatin receiving Transair service. While the

service provided would be superior in terms of dependability and the potential for cost efficiencies the frequency of the service would likely be reduced upon the introduction of Boeing 737 service. The full implementation of the Arctic Air Facilities Policy in the Keewatin should attract a number of new air carriers into the Keewatin air transportation picture. Calm Air will continue to operate a regularly scheduled service into Chesterfield Inlet, Coral Harbour, Whale Cove along with the possible addition of Eskimo Point.

As far as the future is concerned, with the growing significance of the Keewatin, full implementation of the Policy would probably mean that Rankin Inlet would achieve an Arctic "A" airport status. In essence the participation of Transair at both Baker Lake and Rankin Inlet would in the long term be advantageous to these centres in relation to the other settlements served by Calm Air. While the settlements served by Calm Air would increase their individual markets due to the Policy implementation and there would be increased air carrier competition, the limited available market and the continued use of Twin Otter aircraft would likely keep the tariffs high. An increased number of operators in the Keewatin would keep the revenue of the individual air carriers low thus discouraging their investment in improved equipment and risking accidents by forcing the air carriers to seek 'shortcuts' to reduce operating costs. In summary the full implementation of the Arctic Air Facilities Policy would provide a major impetus to the air carrier market in the Keewatin. Transair would expand its equipment investment but its plans would be somewhat at variance with the provisions of the Policy. The third level carrier operation in the Keewatin would be a confusing situation requiring further policy definition.

With the Policy fully implemented in the Keewatin the economic prospects for the future will certainly be improved. Employment will be generated in the construction and operation phases of the Policy implementation process and through the potential for economic development as supported by the Policy. The significance of the Arctic Air Facilities Policy concerning employment is in its provision for the training of local people to operate the airports in the Keewatin. With regard to the direct financial impact of the implementation of the Policy it will likely have a limited effect although it does raise the potential for a greater use of locally produced products. The full implementation of the Policy by improving airport facilities increases the potential for overall cost efficiencies and a reduced cost of living in the Keewatin. The most significant aspect of the Arctic Air Facilities Policy is its role as a means to open up the region to future economic development. In effect, the full implementation of the Policy is expected to win the confidence of the private sector in the developmental possibilities of the region. Certainly the Policy implementation will likely encourage increased mineral exploration and development work in the interior. Also the prospect of a Polar Gas Pipeline being constructed through the interior would certainly be enhanced. These developments in turn could encourage a speed-up in the federal government's negotiations with the Inuit concerning their land claim proposal. Finally the full implementation of the Policy should permit the expansion of the fishing, craft industry and tourism potential of the Keewatin. While the impact of the Policy on the economic prospects of the Keewatin depends on a number of external factors, the full implementation of the Policy will result in a number of significant economic improvements.

The 'quality of life' as reflected in both the life style in the communities and the psychological needs of the Inuit and white populations should benefit in a number of ways from full implementation of the Policy in the Keewatin. The people of the region will have better accessibility to specialized medical services. The educational system will be improved by the fact that it would be more readily available and responsive to the wishes of the local population. Improved availability of law enforcement services should support the life style in the settlements. The fact that full implementation of the Arctic Air Facilities Policy will provide the region with a number of goods previously not available in the communities will bring a number of benefits. The availability of various new food products could result in long term improvements to local health standards. The availability of regular mail and newspaper service can help to relieve the feelings of isolation often experienced in the white population. In a psychological sense, the full implementation of the Policy should benefit the Inuit by increasing the potential for their own economic development. As a result the Inuit can assume greater control over their own destiny. Furthermore the Policy, by increasing accessibility in the Arctic, encourages the growth of cultural, social and political linkages between the various communities of the Arctic. Both of these economic and cultural developments serve as the supports needed to reinforce the Inuit culture in the Keewatin. Full implementation of the Policy will alleviate some of the psychological needs experienced by many in the white population for a quality of life similar to that available in southern Canada through the provision of a dependable air service and the increased availability of goods and services. While the benefits of the Policy will not accrue to both groups in an equal fashion the po-

tential for significant and immediate benefit to both the Inuit and white populations exists.

In the comparison between the two alternatives it becomes obvious that the Policy fully implemented has a wider balance of advantages. Specifically this alternative provides much needed support systems for air traffic in a part of the country where the air mode has a critical role to play. The Policy alternative is economically advantageous to the Keewatin not only in terms of employment, income, cost of living and economic development but also because of the community involvement and community orientation of these economic elements. With regard to the quality of life once again the argument seems clearly to be supportive of the Policy alternative. In both cases however the policies and practices of the air carriers would pose some problems which would require future attention. While there are problems with the second alternative they appear to be less and more manageable than those raised by the first alternative providing for no Policy in the Keewatin. Furthermore, while the maxim that any policy is better than no policy can be stated here it is however true, that there is no definable policy option available that offers the range of advantages that the Arctic Air Facilities Policy does for the Keewatin Region.

Public Policy Improvements for the Arctic Air Facilities Policy

It seems appropriate to identify certain improvements in the Policy or in other policies affecting the Arctic to complement the Arctic Air Facilities Policy.

With the Policy the air carrier situation in the Arctic would require further policy definition. While the Policy provides for a third

level carrier service to operate into the smaller communities through the provision of facilities there has been no recognition of the costs involved in operating such a service. Given the limited market available at these sites along with the constraints posed by the Arctic itself, the high operating costs and resultant tariffs could defeat the purposes of the Policy by limiting access to the air service. With regard to the regional carriers since their operational focus is determined by considerations apart from those provided for in the Policy there is a need to re-define a commonality of interest between the carriers and the Arctic Transportation Agency (ARTA) as illustrated in "The JASPER Report". From this point of reference there are a number of issues to be resolved. The suitability of the facility provisions outlined in the Policy especially with regard to the future is an important concern in light of changing technology and the tendency of some air carriers to disregard the Policy in this regard. Another area of concern involves the need for a definition of adequacy of service in regard to air service in the Arctic especially with regard to frequency and costs. In essence the air carriers in the Arctic represent a vital component in the air transportation system and as such should be part of an ongoing review of the applicability of the Arctic Air Facilities Policy to the area.

For the application of the Policy to be effective in the Arctic there will be a need for a number of strengthened policy directions in areas such as employment training, cost of living and local government.

The availability of an educational system able to provide training specially suited to local conditions is a critical element upon which the future of the region depends. Certainly the use of both culturally sensitive instructors and methods would be of key significance to the Inuit.

The type of training already underway as a part of the Arctic Air Facilities Policy with its emphasis on practical, on-the-job instruction does provide a model for similar programs which could be implemented in a variety of occupations found in the Arctic.

The high cost of living is a feature of Arctic life which is endemic to the region. The impact of these costs on the life style available to the residents of the Arctic is a matter of significance which should be studied and monitored in an ongoing manner.

Since most communities in the Arctic will experience an increased influx of people, materials and goods on account of the Policy it is essential that some control be exercised over the influences permitted. Otherwise these influences could have a disruptive effect on the way of communities of the Arctic. An increase in the power of the local communities to regulate the number and type of influences permitted would reduce the potential for adverse affects.

While the role of air transportation in the Arctic seems assured the potential of other modes should be explored further. With regard to marine transport new ice breaking techniques, improved docking and warehousing methods could be instrumental in providing a cheaper form of transport to parts of the Arctic. Also the introduction of land based transportation could be especially beneficial in regions where smaller settlements lie in close proximity to one another.

In summary, while the Arctic Air Facilities Policy represents one developmental alternative for the Keewatin it has special relevance for the economic and social issues facing the communities of the region. Due to this relevance and the Policy's inherent comprehensiveness, the consequence of its interaction with the communities will be a wide range of significant

impacts. Supported by a number of public policies these impacts could provide the basis for an improvement in the quality of community life available in the Keewatin.

CHAPTER IX

CONCLUSION

This thesis examines the relationship between the Arctic Air Facilities Policy and the Keewatin Region of the Northwest Territories with a view to testing the hypothesis that the Policy is beneficial to the communities of the Keewatin. In the analysis of the relationship it became clear that the Keewatin settlements have characteristics which pose special problems for public policy. The Arctic Air Facilities Policy was examined with respect to the following elements of Keewatin life: air transportation performance, economic impact and the quality of life available in the region. Then the Keewatin with the Policy fully implemented was contrasted to a situation that would probably exist if the Policy had not been introduced. Additionally, related public policies which impinge upon the effectiveness of the Arctic Air Facilities Policy were identified as a basis for recommendations concerning improvements in the Policy.

On the basis of the analysis conducted the following conclusions were reached:

1. The upgraded airport facilities provided under the terms of the Arctic Air Facilities Policy will permit a much improved level of air transportation performance especially with regard to air service reliability, capacity and potential cost efficiencies.

2. Some difficulties could be raised by the fact that Transair will seek to introduce Boeing 737 service with a possible reduction in the frequency of flights and the third level carriers will be limited by increased competition and reduced markets.

3. The Policy will be responsible for the creation of a limited number of permanent jobs and a successful attempt has been made to train and employ Inuit for the available positions.

4. The Policy represents a substantial investment of funds. However only a small part of this money will be spent in the communities concerned whether in the form of salaries or the purchase of local goods and services.

5. The impact of the Arctic Air Facilities Policy on the cost of living will be limited due to the fact that the marine mode serves as the major transporter of cargo and the Hudson's Bay Company appears to control the price of consumer goods sold in the region.

6. The upgrading of facilities provided under the terms of the Policy is an essential condition upon which the largest prospective economic projects depend. Certainly mineral exploration and development along with pipeline construction would require a superior air transportation capability.

7. By serving as an impetus to economic development the Policy could be instrumental in an early resolution of an Inuit land claim settlement thus providing the basis for the continued presence of the Inuit in the Keewatin.

8. The more reliable conditions provided by the Policy should increase the flow of vegetables dairy products and fresh fruit which could improve both dietary habits and the long term health of residents.

9. The upgraded airport facilities would permit a higher level of medical care for the residents of the Arctic.

10. The Policy would increase the potential for the local control of education along with the accessibility of all residents to an improved level of educational services.

11. The improved air transportation system resulting from the provisions of the Policy will permit the growth of inter-community and inter-regional contacts in the Arctic. As a result these contacts could nuture the development of a strengthened Arctic identity among residents of the area. This development in turn could lead to a stronger Inuit culture in the Arctic and greater political effectiveness.

12. Through the increased availability of goods and improved services and the fact that the reliability of the air service will make the region more accessible, the psychological needs of the white population will in effect be better supported.

13. With regard to the psychological needs of the Inuit the situation can be regarded with cautious optimism. Certainly the Inuit have a long history of adaptiveness in their relations with their environment and foreign cultures. Also the Policy through its provisions could provide a number of satisfactions to the Inuit in terms of economic development, increased availability of goods and services and the potential for a cultural rebirth in the Arctic. However it is important that some local controls be exercised to ensure that the Inuit population especially is not flooded with a mass of external influences which could adversely affect their life style. By rejecting those influences which could be a source of distress among the Inuit the positive aspects of the opening up process resulting from the Policy will be enhanced.

14. If the Policy had not been introduced in the Arctic, the situation would appear to offer no advantages and in effect would be limited in a number of respects compared to that which would exist if the Policy were not instituted. Certainly air transportation itself would be restrained in terms of its performance potential. A deterioration in the air carrier situation would further downgrade the service available. As a result the region would face a future of economic stagnation. This situation along with a problematic quality of life would make the continued existence of the white and Inuit populations in the region quite untenable.

15. The ability of the Arctic Air Facilities Policy to fulfill its promise will depend in large measure on a number of complementary measures by government to ensure the realization of the Policy's objectives.

    With regard to air transportation there are two vital needs. The first is to establish closer contact with the air carriers to ensure that the Policy remains a relevant guide to airport facility development in the Keewatin. The other need is for improvement in the third level air carrier situation in the region. While the issue is inherently complex, the formulation of a third level air carrier policy to address concerns such as the economic viability of the smaller air carriers and the adequacy of air service being provided to Arctic settlements, would improve the potential effectiveness of the Arctic Air Facilities Policy.

16. In the area of economic development in the Keewatin a number of measures will be necessary. Most importantly a massive effort should be made to provide sensitive training to the Inuit in particular to equip them with suitable employment and community living skills. Also greater encouragement should be provided for the exploration and development of viable activities which could return income to the region. With regard to cost of living it is likely that the possibilities for subsidies should be closely examined. Finally increased inducements should be provided to the private sector to encourage their participation in the economic development of the area.

17. Regarding the quality of life, continued efforts should be made to ensure that improvements in the provision of services such as medical care and education actually take place.

18. The continued growth of an effective form of local government is fundamental to the success of the Arctic Air Facilities Policy. Besides giving the communities influence over developments which may be harmful to their way of life, an effective form of self-government would invite increased local participation in growth taking place in the region and ensure that this development will actually meet the needs of local residents.

In conclusion the Arctic Air Facilities Policy appears on balance to be positive in its effects. For best implementation it needs to be integrated with other public policies supportive of the Keewatin and of the Arctic itself. The hypothesis that the Policy is beneficial to the communities of the Keewatin is therefore supported.

APPENDIX A

POLICY FOR THE PROVISION OF AIR TRANSPORTATION FACILITIES AND SERVICES IN THE YUKON AND NORTHWEST TERRITORIES

Policy for the Provision of Air Transportation Facilities and Services in the Yukon and Northwest Territories

A. GENERAL

B. CLASSIFICATION OF ARCTIC AIRPORTS

- Arctic A (Major)
- Arctic B (Area)
- Arctic C (Community)
- Arctic Seaplane Bases

C. MINIMUM STANDARDS FOR ARCTIC AIRPORT FACILITIES

1. Arctic A Major
2. Arctic B Area
3. Arctic C Community
4. Arctic Seaplane Bases

D. ARCTIC AIR ROUTE NAVIGATIONAL FACILITIES

E. PROVISION, OPERATION AND MAINTENANCE OF ARCTIC AIRPORT COMMUNICATION AND METEOROLOGICAL FACILITIES

1. - M.O.T. Responsibilities
2. - Y.T./N.W.T. Responsibilities
3. - D.O.E. Responsibilities

C. FINANCIAL RESPONSIBILITIES

1. M.O.T.

   (a) Capital

   (b) Operation and Maintenance Arctic A

   (c) Operation and Maintenance Arctic B and C

   (d) Revenue

2. D.I.N.A.

3. Territorial Governments

A. GENERAL

1. The Ministry of Transport shall provide and maintain adequate air transportation facilities to meet the public need in the Yukon and Northwest Territories in accordance with the criteria and standards outlined in the following policy.

B. CLASSIFICATION OF AIRPORT

Arctic Airports shall be provided at communities in the Yukon and Northwest Territories classified in accordance with the following criteria: Note - The application of these criteria must of necessity be flexible due to changing circumstances such as resource exploration and exploitation, air service route structure, types of aircraft being used, acceptability of other means of transportation.

(1) Arctic "A" (Major) Airports

Those airports serving population centres which have the following characteristics:

- Served by an air carrier on a regular scheduled basis
- No means of regular transportation other than air
- Major distribution centre
- Strategic location
- A capital or regional administrative centre
- An extensive continuing resource development role

(2) Arctic B - (Area) Airports

Those airports serving population centres which have the following characteristics:

- A population of more than 400
- No means of regular transportation other than air
- Served by a regular reliable air service
- A growing community
- An area administrative centre
- An active role in resource development

(3) Arctic C - (Community) Airports

Those airports serving populations centres which have the following characteristics:

- A population of more than 100
- No means of regular transportation other than air

(4) Arctic Seaplane Bases

Seaplane facilities will be provided where it is determined that such facilities are justified on the basis of economic and technical evaluations.

C. MINIMUM STANDARDS FOR AIRPORT FACILITIES

Air transportation facilities will be provided to the following standards to ensure communities in the Canadian Territories may be provided with reliable, regular and efficient air services:

1. Arctic A - (MAJOR) Airports - to be used by Boeing 737 and 727, Lockheed Electra and Hercules and similar turbine-engined aircraft operated on a regular basis

Runway	- 6,000' x 150' paved or stabilized surface for year round use. Runways of a greater length will be provided based on a detailed evaluation of the operational and economic factors to accommodate the operation of large aircraft. The maximum applicable clearway will be provided and declared.
Lighting	- High intensity Runway and approach lighting, lighted taxiways, visual approach slope indicators and threshold identification lights, either singly or in combination as will meet the operational requirement, rotating beacon, lighted wind socks.
Approach Aids	- Instrument Landing System (ILS). non-directional beacon (NDB)
Navigation Aids	- Very high frequency Omni range and distance measuring equipment (VOR/DME)
Passenger, Aircraft and Airport Facilities	- Passenger terminal building, airport access road - Paved or stablized aircraft parking area and taxiway. - Aviation fuel storage and dispensing facilities.

	Airport Maintenance equipment, garages and servicing facilities.
Communications	- Air-ground and point to point communications.
Meteorological	- Routine meteorological observing programmes, connection to dedicated meteorological circuit(s) to provide requisite information required for pre-flight planning and flight watch.

2. Arctic B - (Area) Airports - to be used by F28, 748, F227, YS11 and similar turbine-engined aircraft operated on a regular air service

Runway	- 5,000' x 150' gravel surface for year round use. A runway of lesser length with a designated clearway** may be acceptable where due to terrain restrictions 5,000' is uneconomical or where a suitable site is too remote from the community.
Lighting	- Runway and approach lighting, visual approach slope indicators and threshold identification lights, either singly or in combination as will meet the operational requirement, rotating beacon, lighted wind socks.
Approach and Navigation Aids	- Non-directional beacon (NDB).
Passenger, Aircraft and Airport Facilities	- Passenger-cargo shelter, airport access road, aircraft parking area, aviation fuel storage and dispensing facilities airport maintenance equipment, garages and servicing facilities.
Communications	- Air-ground and point-to-point communications.

Meteorological	- Meteorological observations on request, communications (radio or land-line) links through which requisite meteorological information for pre-flight planning* can be obtained on request.

3. Arctic C - (Community) Airports - to be used by Twin Otter, Cessna 402, Aztec and similar STOL and light twin aircraft

Runway	- 3,000' x 100' gravel surface for year round use. A runway of lesser length, with a designated clearway** may be acceptable where due to terrain restrictions 3,000' is uneconomical or the site is too remote from the community.
Lighting	- Runway and approach lighting, visual approach slope indicators, threshold identification lights, singly or in combination as will meet the operational requirement, rotating beacon, lighted wind socks..
Approach and Navigation Aids	- Non-directional beacon (NDB).
Passenger and Aircraft Facilities	- Passenger-cargo shelter, airport access road, aircraft parking apron, aviation fuel storage and dispensing facilities, airport maintenance equipment, garages and servicing facilities.
Communications	- Air-ground and point-to-point communications.

Meteorological	- Meteorological observations on request, communications (radio or land-line) links through which requisite meteorological information for pre-flight planning* can be obtained on request.

4. Arctic Seaplane Bases - A minimum standard to provide a safe and efficient operation commensurate with the type and frequency of seaplane service envisaged.

D. ARCTIC AIR ROUTE NAVIGATION FACILITIES

In addition to the VOR/DME to be installed at the Arctic "A" airports, VOR/DME shall be installed at strategically located "B" and "C" airports or other locations where the facility is required to upgrade the navigational information along major airways and air route. At locations where VOR/DME is installed it may, where practicable, be sited to serve as an approach aid also.

Where VOR/DME is installed, it is intended that any existing NDB's shall remain in service and, where necessary, shall be upgraded to comply with MOT standards.

E. PROVISION, OPERATION AND MAINTENANCE OF ARCTIC AIRPORT COMMUNICATION AND METEOROLOGICAL FACILITIES AND SERVICES

1. The Ministry of Transport shall be responsible to:

(a) Provide all air transportation facilities and equipment at all Arctic Airports in accordance with priorities and requirements established in consultation with Territorial Governments, Department of Indian and Northern Affairs and Department of the Environment

(b) Operate and maintain all air transportation facilities and services at Arctic "A" airports

(c) Inspect and maintain communication equipment at Arctic B & C airports

(d) Train and monitor communication operators and monitor communication standards at Arctic B & C airports

(e) Define land requirements for airport development at A, B, & C airports. Land for Arctic "A" airports and other airports and installations operated and maintained by the Ministry of Transport shall be transferred to MOT for administration and control

(f) Provide technical advice and training services to Territorial Governments for the operation and maintenance of Arctic B & C airports to MOT standards

(g) Provide, operate and maintain other specific airports, aeradio stations or other facilities and services to meet national or international requirements

2. The Territorial Governments shall be responsible to:

(a) Operate and maintain Arctic B & C airports in accordance with MOT standards

(b) Operate communication and meteorological equipment at Arctic B & C airports in accordance with MOT standards

(c) Provide Airport maintenance equipment, garage facilities and equipment fuel storage for the maintenance of Arctic B & C airport services where the equipment and facilities will be used for airport and community purposes jointly

(d) At Arctic B & C airports provide staff housing as required

(e) Operate aviation fuel storage and dispensing facilities where it is not practicable for industry to do so

(f) In coordination with Department of Indian and Northern Affairs, provide and maintain land reservations for airport and other air transportation purposes

3. The Department of the Environment shall be responsible to:

(a) Provide, inspect and maintain meteorological equipment at Arctic B & C airports

(b) Train and monitor weather observers and monitor meteorological standards at Arctic B & C airports

(c) Operate essential facilities to meet national and international requirements

F. FINANCIAL RESPONSIBILITIES

1. The Ministry of Transport shall:

(a) Fund the provision of all airport, air navigation, communications and meteorological facilities and equipment in the Air Transportation - Capital Expenditures Vote

(b) Fund the maintenance and operation of all air transportation facilities and services undertaken directly by the Ministry or by the Department of the Environment in support of these services in the Air Transportation - Operating Expenditures Vote

(c) Fund the operation and maintenance of "B" and "C" Airports undertaken by the Territorial Governments

in the Air Transportation - Grants and Contributions Vote

(d) Levy aircraft landing fees and other charges as may be established from time to time

2. The Department of Indian and Northern Affairs shall:

Fund the provision of the joint community airport maintenance equipment, equipment garages, equipment fuel storage and handling facilities and staff housing in the Northern Development Program.

3. The Territorial Governments shall:

Develop annually, in advance, the O & M budgets for "B" and "C" airports in consonance with responsibilities outlined in Para. E2 above. These budgets will be based on technical advice from MOT and will be approved by MOT for funding in the Air Transportation - Grants and Contributions Vote.

Levy and Collect airport landing fees and other charges for services provided.

* Pre-flight planning includes actual weather reports for destination and significant enroute airports, forecasts of enroute meteorological conditions, terminal forecasts for destination and alternate(s) and relevant weather advisories.

** When, by reason of the constraints mentioned, it is not practicable to provide the minimum standard length of runway at "B" & "C" airports, the maximum applicable clearway will be provided and declared, where it is practicable and economically feasible to do so. This will permit the air carrier, as required, to exploit load advantages accruing from the use of the clearway.

APPENDIX B

ASSORTED TABLES DESCRIBING THE KEEWATIN REGION

TABLE 11

Employment in Keewatin Communities

by Type and Ethnic Status

Employment Type	Baker Lake		Chesterfield Inlet		Coral Harbour		Eskimo Point		Rankin Inlet		Whale Cove	
	Inuit	White	Inuit	White	Inuit	White	Inuit	White	Inuit	White	Inuit	White
Agriculture	-	-	-	-	-	-	-	1	-	-	-	-
Hunting, Fishing, Trapping	27	-	-	-	6	-	29	-	6	-	2	-
Mining, Quaries, Oil	-	-	3	-	-	-	7	-	3	1	1	1
Manufacturing	-	-	1	-	-	-	2	-	3	1	1	-
Construction	3	-	6	-	-	-	17	-	11	-	3	1
Transportation Communication	1	2	1	-	3	-	8	-	5	1	2	1
Trade	22	2	20	-	15	-	42	2	18	1	8	-
Financial Insurance	-	1	-	-	-	-	-	-	-	-	-	-
Commercial Business	4	6	13	2	7	3	18	9	8	7	1	6
Federal Administration	11	4	14	-	23	-	37	3	13	2	5	1
Territorial Administration	32	23	33	3	25	5	146	10	43	36	14	6
Municipal Administration	4	-	17	-	10	-	9	-	11	-	2	-
Hire North	-	-	-	-	-	-	-	-	1	-	-	-
Not Applicable Unspecified	75	4	14	-	23	5	120	1	98	-	23	3
Total	179	42	122	5	112	13	435	26	220	49	62	19

Source: Government of Northwest Territories
Territorial Employment Record
Information System (TERIS) February, 1977

TABLE 12

Birth and Death Rates: A Comparison Between the Keewatin, Northwest Territories and Canada

	Keewatin Region[1]					Northwest Territories		Canada	
	Births	Deaths	Population	Births per 1,000	Deaths per 1,000	Births 2 per 1,000	Deaths 3 per 1,000	Births 2 per 1,000	Deaths 3 per 1,000
1971	144	31	3,411	42	9	37	6.6	16.8	7.3
1972	141	28	3,822	36	7.5	34.4	7.6	15.9	7.4
1973	117	14	3,926	30	3.5	31.9	6.6	15.5	7.4
1974	115	28	3,990	29	7	27.8	5.5	15.4	7.4
1975	134	26	4,025	33	6.5	n/a	n/a	n/a	n/a

Sources:
1. Department of Health & Welfare
   Northwest Territorial Region
   Edmonton, Alberta
2. Live Births, Canada and Provinces,
   Catalogue No. 84-206
   Vital Statistics
   Births 1974
3. Deaths and Rates Canada and Provinces
   Catologue No. 84-206
   Vital Statistics
   Deaths 74

TABLE 13

Employment Status for Keewatin Communities

		EMPLOYED	UNEMPLOYED	NEVER EMPLOYED	HOUSE-WIVES	TOTAL
Baker Lake	Inuit	95 (56.2)	6 (3.5)	12 (7.1)	57 (33.1)	170 (85.0)
	White	28 (93.3)	0	0	2 (6.6)	30 (15.0)
Chesterfield Inlet	Inuit	24 (40.0)	21 (35.0)	6 (10.0)	10 (15.0)	61 (92.3)
	White	4 (100)	0	0	0	4 (6.1)
Coral Harbour	Inuit	17 (23.9)	30 (42.3)	15 (21.1)	9 (12.6)	71 (87.6)
	White	5 (50.0)	0	5 (50.0)	0	10 (12.3)
Eskimo Point	Inuit	116 (40.0)	48 (16.5)	35 (12.1)	92 (31.4)	291 (94.8)
	White	11 (73.3)	2 (13.3)	0	2 (13.3)	15 (4.9)
Rankin Inlet	Inuit	72 (40.0)	19 (10.5)	42 (23.3)	47 (26.1)	180 (81.4)
	White	40 (97.5)	1 (2.4)	0	0	41 (18.5)
Whale Cove	Inuit	17 (38.6)	9 (20.4)	10 (22.7)	8 (18.1)	44 (77.2)
	White	9 (69.2)	2 (15.4)	0	2 (15.4)	13 (22.8)

Source: Government of Northwest Territories
Territorial Employment Record
Information System (TERIS)
February, 1977

TABLE 14

Length of Stay in NWT for Each Keewatin Community

Community (% of 14 to 65) (age group)	Ethnic Group	0-1 year	2-4 years	5-7 years	8-10 years	11-16 years	over 16 years	Unspecified years	Total (Percentage of Sample)
Baker Lake	Inuit	1 (0.6)	0	3 (1.8)	0	7 (4.1)	36 21.3	123 72.2	170 (85%)
(50% sample)	White	11 (36.6)	2 (6.6)	6 (20.0)	2 (6.6)		1 (3.3)	8 (26.6)	30 (15%)
Chesterfield Inlet	Inuit	5 (8.3)	6 (10.0)	2 (3.3)	2 (3.3)	13 (21.6)	19 (31.6)	14 (21.6)	61 (93.8)
(50% sample)	White	3 (75.0)	1 (25.0)	0	0	0	0	0	4 (6.1)
Coral Harbour	Inuit	8 (11.3)	6 (8.4)	0	1 (1.4)	4 (5.6)	43 (60.6)	9 (12.6)	71 (87.6)
(40% sample)	White	1 (10.0)	2 (20.0)	0	0	1 (10.0)		6 (60.0)	10 (12.3)
Eskimo Point	Inuit	8 (2.8)	7 (2.4)	2 (0.7)	4 (1.4)	31 (10.7)	60 (20.7)	179 (61.4)	291 (95.1)
(75% sample)	White	11 (73.3)	1 (6.6)	0	1 (6.6)	0	0	2 (13.3)	15 (4.9)
Rankin Inlet	Inuit	4 (2.3)	7 (3.9)	0	5 (2.8)	6 2.9	42 (23.1)	116 (64.9)	180 (81.4)
(50% sample)	White	15 (36.6)	8 (19.5)	5 (12.2)	2 (4.9)	0	0	11 (26.8)	41 (18.5)
Whale Cove	Inuit	0	0	5 (11.3)	0	2 (4.6)	13 (29.5)	24 (54.5)	44 (77.1)
(75% sample	White	6 (46.1)	3 (23.1)	0	0	2 (15.4)	1 (7.7)	1 (7.7)	13 (22.8)

Source: Government of Northwest Territories
Territorial Employment Record Information
System (TERIS) February, 1977

TABLE 15

Hudson's Bay Company
Record of Percentage Increase in Volume Sales
Over the Previous Year for Keewatin Store Locations

	1970	1971	1972	1973	1974	1975	1976	Estimated Total for all Commercial Sales in the Community 1977 (in dollars)
Baker Lake	4.2%	9.7%	8.2%	28.4%	27.7%	22.5%	28.8%	1.8 million
Chesterfield Inlet	6.8%	2.3%	6.2%	33.8%	21.5%	-2.2%	-1.2%	0.4 million
Coral Harbour	6.3%	18.8%	0.8%	12.5%	30.6%	-3.2%	12.3%	0.8 million
Eskimo Point	-4.6%	33.3%	5.8%	18.9%	47.9%	16.7%	2.4%	1.3 million
Rankin Inlet	11.7%	33.5%	-1.4%	22.2%	34.0%	22.1%	9.6%	1.5 million
Whale Cove	-	-	-	-	-	-	-	0.3 million

Source: Mr. Spracklin
Manager Northern Stores
Hudson's Bay Company
Winnipeg, Manitoba

TABLE 16

Total Dollar Value of Furs
Sold in Communities of the Keewatin

	1970	1971	1972	1973	1974	1975
Baker Lake	1,700	1,305	4,200	3,300	46,000	2,000
Chesterfield Inlet	3,100	5,000	4,100	6,900	12,500	5,600
Coral Harbour	28,100	71,600	26,000	33,800	100,000	86,000
Eskimo Point	10,500	19,500	17,000	24,000	175,000	66,000
Rankin Inlet	2,600	5,100	1,400	300	18,700	5,800
Whale Cove	n/a	n/a	n/a	n/a	n/a	n/a

Source: Mr. Spracklin
Manager Northern Stores
Hudson's Bay Company
Winnipeg, Manitoba

TABLE 17

Comparison of Reported Income Expenditures Between Parts of Canada
(by % of total income spent on consumption categories)

Consumption Category	NWT Average		Keewatin Average		Winnipeg Manitoba
	Summer	Winter	Summer	Winter	All Seasons
Food	38%	39%	36%	39%	16.5%
Shelter	31%	32%	34%	32%	13.8%
Household Operations	4%	4%	3%	4%	3.3%
Clothing	-	13%	-	13%	7.7%
Personal Care	3%	3%	2%	4%	2.1%
Recreation	9%	8%	8%	8%	3.8%

Notes: The expenditures do not total 100% as there is some overlapping; also some expenditure categories were left out because they could not be readily compared.

It is obvious from the information listed above that living costs in NWT and Keewatin are higher. A consideration is the fact that if income is lower then a larger percentage of it will be devoted to necessities such as food and shelter.

Source: Yellowknife and Winnipeg data obtained from Statistics Canada, Urban Family Expenditure 1972

NWT and Keewatin Statistics obtained from Cost of Living Survey conducted by Market Information Services Ltd. 1973

TABLE 18

Costs of Transportation in 1973
for Keewatin settlements from their supply points
Air (Winnipeg) and Marine (Montreal)

Settlement	Freight Rates (Price/pound) Air	Marine	Surface	Most economic Route (marine)	Alternate Route (air)
Baker Lake	64	6.2	-	6.2	64
Chesterfield Inlet	65	6.2	-	6.2	65
Coral Harbour	77	6.2	-	6.2	77
Eskimo Point	39	6.2	-	6.2	39
Rankin Inlet	54	6.2	-	6.2	54
Whale Cove	52	6.2	-	6.2	52

Notes: To standardize rates for comparitive purposes, the rates for each transportation mode are based on general commodity classifications and weights of 100 lbs. or less.

The most economic route would be normally used however, the alternate would most likely be employed when the most economical route is unavailable.

Source: Cost of Living Survey, 1973
Market Information Services Ltd

TABLE 19

Composite weighted scale for items of basic maintenance (food, clothing, household operations and personal care)

	Weighted Scale Reference to Yellowknife	Weighted Scale Reference to Winnipeg
Baker Lake	3.00	5.72
Chesterfield Inlet	3.08	5.85
Coral Harbour	2.28	5.13
Eskimo Point	3.23	5.18
Rankin Inlet	2.45	5.97
Whale Cove	5.97	7.82

Note: The composite weighted is arrived at by totalling the percentage price differences for each item (food, clothing, household operations and personal care)

From the percentage total a composite figure is arrived at and applied to the table below allows the composite weighted scale to be arrived at.

Range of % Differences from the Reference	Weighted Scale
+4.99% and under	1
+5.00% to 9.99%	2
+10.00% to 14.99%	3
+15.00% to 19.99%	4
+20.00% to 29.99%	5
+30.00% to 39.99%	6
+40.00% to 49.99%	7
+50.00% to 59.99%	8
+60.00% to 69.99%	9
+70.00% and over	10

Source: Cost of Living Study NWT, 1973

TABLE 20

Tonnage (short tons shipped in the Keewatin)
for 1972, 1975 and 1976 by
place of origin and destination

	1972				1975						1976					
	Deck Cargo		Bulk Fuel		Deck Cargo		Bulk Fuel		Inter-region		Deck Cargo		Bulk Fuel		Inter-region	
	from Montreal	from Churchill	from Montreal	from Churchill	from Montreal	from Churchill	from Montreal	from Churchill	Deck cargo	Bulk fuel	from Montreal	from Churchill	from Montreal	from Churchill	Bulk Cargo	Bulk fuel
Baker Lake	1,438	108	-	2,595	11.0	1,699.8	-	3,017.1	(-115.2)	-	-	3,173.4	-	3,173.4	(-165.5)	
Chesterfield Inlet	337	37	-	1,028	16.5	184.2	-	1,401.1	(-8.3)		-	474.6	-	1,126.1	(0.3) 218.2 (-13.2)	(-61.3)
Coral Harbour	1,046	80	-	1,829	1,142.4	-	2,034	-	(68.8)	(-218.4)	-	1,398.9	-	2,490.8	(-112.3)	
Eskimo Point	746	49	-	1,805	27.5	1,048.7	-	2,669.1	(0.1) +0.1	(-252.4)		897.3	-	2,527.9	(-7.7)	(144.4)
Rankin Inlet	1,056	122	-	2,537	642.6	1,071.4	2,075.1	1,919.4	(-5.1) +252.4	(-20 1) -		2,147.3	-	4,771.6	(-26.4)	
Whale Cove	145	175	-	747	165.9	165.9	-	-	(-94.7)	-	-	103.2	-	756.3	(-218.2) +0.3	
	4,768	569	-	10,543	1,993.7	4,169.8	4,109.1	10,121.3				7,238.2	-	14,846.1		
	6,531		11,131		6,455.7	14,721.3			(-292.1)	(238.5)					(-325.1)	(-205.7)
												7,781.8		15,051.8		

Note: 1. Inter-region - refers to lateral and retrograde movements.
(-) - signifies - tons lost to the region

2. After 1973 - fuel in barrels was counted under bulk fuel rather than deck cargo

Source: 1975/76 - figures supplied by NTCL
1972 figures - P. 6 - "Benefits and Costs Involved in Eastern Canada

TABLE 21

Number of Passengers (Enplaning and Deplaning)

	1971	1972	1973	1974	1975	1976	1980	1985	1990	1995
Baker Lake	1,196	1,357	1,644	1,985	1,200	1,400	2,400	4,900	6,300	8,000
Chesterfield Inlet	294	406	692	725	n/a	n/a	1,000	1,300	1,600	2,100
Coral Harbour	557	600	602	935	n/a	n/a	1,300	1,600	2,000	2,500
Eskimo Point	859	1,072	1,178	2,509	n/a	n/a	4,000	5,100	6,500	8,300
Rankin Inlet	1,594	2,037	2,787	4,258	n/a	n/a	8,000	13,000	16,000	21,000
Whale Cove	125	236	425	632	n/a	n/a	600	700	800	900

Source: Aviation Statistics Centre
Transport Canada

TABLE 22

Pounds of Cargo (Enplaning and Deplaning)

	1971	1972	1973	1974	1975	1976	1980	1985	1990	1995
Baker Lake	n/a	142,047	146,962	192,206	216,000	800,000	800,000	800,000	800,000	800,000
Chesterfield Inlet	n/a	n/a	n/a	64,993	45,039					
Coral Harbour	n/a	67,178	90,801	107,504	114,000	400,000	400,000	400,000	400,000	400,000
Eskimo Point	n/a	163,931	178,569	404,798	468,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Rankin Inlet	n/a	317,302	202,967	270,879	356,978					
Whale Cove	n/a	n/a	n/a	89,579	n/a					

Source: Aviation Statistics Centre
Transport Canada

TABLE 23

Pounds of Mail (Enplaning and Deplaning)

	1971	1972	1973	1974	1975	1980	1985	1990	1995
Baker Lake	n/a	74,782	100,079	103,814	104,400	400,000	400,000	400,000	400,000
Chesterfield Inlet	n/a	n/a	n/a	41,235	33,624				
Coral Harbour	n/a	37,115	55,816	76,544	82,800	300,000	300,000	300,000	300,000
Eskimo Point	n/a	38,982	51,806	62,566	68,400	300,000	300,000	300,000	300,000
Rankin Inlet	n/a	52,852	71,057	77,347	68,430				
Whale Cove	n/a	n/a	n/a	34,387	35,796				

Source: Aviation Statistics Centre
Transport Canada

TABLE 24

KEEWATIN SCHEDULE
Effective January 31, 1977

FLIGHT NUMBER		417*	415*	449	421*	467	431*	445	419*	411*	413*	461	469	447	465	441	463
CLASS		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
EQUIPMENT		DHT	DHT	YS1	DHT	YS1	DHT	YS1	DHT	DHT	DHT	YS1	YS1	YS1	YS1	YS1	YS1
FREQUENCY		Fr only	Tu only	We only	We only	Fr only	Fr only	Tu only	Tu only	Mo only	Mo only	We only	Su only	Tu & Th	Fr only	Mo only	We only
CHURCHILL	D			0800		0800		0900		0800		1100	1140	1330	1455	1615	1720
ESKIMO POINT	A			0845		0845				0905							
	D				0910	0900				0925							
WHALE COVE	A				0955					1010							
	D				1015					1030							
RANKIN INLET	A				1040	0940		1030		1055			1310	1500		1745	1850
	D	0800	0920		1105		1010		1100	1120	1605					1805	
WHALE COVE	A		0945														
CHESTERFIELD INLET	A	0830									1635						
BAKER LAKE	A											1250			1645	1900	
CORAL HARBOUR	A				1300		1205		1255						Thru Flt. See 466		
	D				1320												
REPULSE BAY	A				1450					1320							

. Note: May be combined with Flt. 431 to YZS - dependent on Pax demand

* Operated by Calm Air Ltd.

Source: Transair Ltd
Winnipeg, Manitoba

TABLE 24

KEEWATIN SCHEDULE
Effective January 31, 1977

FLIGHT NUMBER		424*	450	418*	468	416*	446	470	462	420*	448	432*	466	422*	464	412*	414*	442
CLASS		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
EQUIPMENT		DHT	YS1	DHT	YS1	DHT	YS1	YS1	YS1	DHT	YS1	DHT	YS1	DHT	YS1	DHT	DHT	YS1
FREQUENCY		We Only	We Only	Fr Only	Fr Only	Tu Only	Tu Only	Su Only	We Only	Tu Only	Tu Th	Fr Only	Fr Only	We Only	We Only	Mo Only	Mo Only	Mo Only
REPULSE BAY	D																	
CORAL HARBOUR	A													1510		1340		
	D													1640				
BAKER LAKE	D									1315		1225		1700				
CHESTERFIELD INLET	D			0850					1320				1705				1655	1930
WHALE COVE	D					1005												
RANKIN INLET	A			0920	1010	1030	1100	1330		1510	1530	1420	1755	1855	1920	1540	1725	2020
	D	0710										1445	1810					2035
WHALE COVE	A	0735					1140					1510						
	D	0755					1155					1530						
ESKIMO POINT	A	0840	0905		1140		1240	1450	1510		1700	1615	1935		2050			2205
	D		0950									1635						
CHURCHILL	A											1740						

. Note: May be combined with Flt 432 from YZS to YRT - dependent on Pax demand

* Operated by Calm Air Ltd.

Source: Transair Ltd
Winnipeg, Manitoba

TABLE 25

Use of Air Service For Purposes of Evacuations

Location of Nursing Station	Facilities and Staff	Frequency of Doctor's Visit	Dental Care	1972		1973		1974		1975		1976	
				Number of Charters with Patients	Number of Scheduled flights with Patients	Number of Charters with Patients	Number of Scheduled flights with Patients	Number of Charters with Patients	Number of Scheduled flights with Patients	Number of Charters with Patients	Number of Scheduled flights with Patients	Number of Charters with Patients	Number of Scheduled flights with Patients
Baker Lake	5 beds 3 nurses	3-5 days per month	Resident dental therapist Dentist twice yearly	4	50	7	79	9	45	14	124	8	113
Chesterfield Inlet	3 beds 1 nurse	2-3 days every 6 weeks	Dentist and therapist twice a year	12	45	5	45	5	34	5	36	11	41
Coral Harbour	5 beds 2 nurses	visit indefinite every 6 weeks	Dentist and therapist twice a year	9	59	7	45	13	56	9	64	10	74
Eskimo Point	5 beds 4 nurses	3-5 days every month	Dentist and therapist twice a year	11	116	8	147	30	159	27	117	10	116
Rankin Inlet	10 beds 4 nurses	3-5 days every month	Resident dental therapist Dentist twice a year	9	94	7	107	13	152	12	108	20	202
Whale Cove	2 beds 1 nurse	2-3 days every 6 weeks	Dentist and therapist twice a year	7	22	2	24	6	31	4	27	9	37

Source: U. M. Bowly
Zone Director
Keewatin Zone
Medical Services
Department of Health and Welfare

TABLE 26

Outline of Keewatin Airports - 1977 - with Arctic Air Facilities Policy
Partially Implemented

				Runways			Airport		Runway				Navigation Aids						Aviation Fuel		Other			
	Arctic Airport Classification	Operator	License	Length	Width	Surface	Wind Indicator	Rotating Beacon	Approach	Threshold	Runway End Identification	Edge	VASIS	NDB's	VOR/DME	Instrument Approach	Air/ground Communication	Weather Service	Annual Supply Storage (1000 gal)	Dispensing Storage (1000 gal)	Air Terminal Bldg.	Maintenance Garage	Maintenance Equipment	Fire Hall
Baker Lake	B	TC	P	4200'	150'	G	x	x		x	x	x	x	x	x/-	NDB VOR	A	x		x		x	x	
Chesterfield Inlet	C	NWT	U	3100'	100'	G	x							x			A	x						
Coral Harbour	B	TC	P	6000'	200'	G	x	x	x	x		x		x	x/-	NDB VOR	A	x				x	x	
Eskimo Point	C	NWT	U	4000'	100'	G	x							x			V(U)				x			
Rankin Inlet	B	NWT	P	5000'	150'	G	x	x		x		x		x		NDB	V(U)			x				
Whale Cove	C	NWT	U	4000'	200'	G						x (temporary)		x			V(U)							

Source: Construction Branch
Transport Canada
Winnipeg

TABLE 27

Outline of the Arctic Air Facilities Policy
Fully Implemented

	Runways						Airport		Runway				Navigation Aids						Aviation Fuel		Other			
	Arctic Airport Classification	Operator	License	Length	Width	Surface	Wind Indicator	Rotating Beacon	Approach	Threshold	Runway End Identification	Edge	VASIS	NDB's	VOR/DME	Instrument Approach	Air/ground Communication	Weather Service	Annual Supply Storage (1000 gal)	Dispensing Storage (1000 gal)	Air Terminal Bldg.	Maintenance Garage	Maintenance Equipment	Fire Hall
Baker Lake	B	NWT	P	5000'	150'	G	x	x	x	x		x	x	x		NDB VOR	A	x	x	x	x	x	x	x
Chesterfield Inlet	C	NWT	P	3000'	100'	G	x	x	x	x		x	x	x		NDB	V(U)	x	x	x	x	x	x	x
Coral Harbour	B	NWT	P	5000'	150'	G	x	x	x	x		x	x	x		NDB VOR	A	x	x	x	x	x	x	x
Eskimo Point	C	NWT	P	3000'	100'	G	x	x	x	x		x	x	x		NDB	V(U)	x	x	x	x	x	x	x
Rankin Inlet	B	NWT	P	5000'	150'	G	x	x	x	x		x	x	x		NDB	A	x	x	x	x	x	x	x
	A	TC	P	6000'	150'	P	x	x	x	x		x	x	x	x	NDB ILS VOR	A	x	x	x	x	x	x	x
Whale Cove	C	NWT	P	3000'	150'	G	x	x	x	x		x	x	x		NDB	V(U)	x	x	x	x	x	x	

Source: Construction Branch
Transport Canada
Winnipeg

Abbreviations (For Tables on Page 170 and 171)

X - in any column indicates that the facility is presently in place

Airport Classification Column (According to Arctic Air Facilities Policy)

A - Major

B - Area

C - Community

Operator Column

TC - Transport Canada

NWT - Government of the Northwest Territories

License Column

P - Public License

U - Unlicensed

Runway Surface Column

G - Gravel

P - Paved

Very High Frequency Omni Range (VOR)/Distance Measuring Equipment (DME)

X/ - indicates VOR only

Air/Ground Communication Column

V(U) - VHF Unicom Transceiver

A - Aeradio Station

TABLE 28

Calm Air Tariff Schedule

			Passengers				Freight			
		Miles	Current rate Transair	Yield/ Mile	Proposed Calm Air	Yield/ Mile	Current rate Transair	Yield/Ton Mile	Proposed Calm Air	Yield/Ton Mile
Baker Lake	Chesterfield Inlet	217	$ 72.00	33.2	$142.00	65.4	$0.32	$2.949	$0.70	$6.452
	Coral Harbour	448	146.00	32.6	249.00	55.6	.69	3.080	1.25	5.580
	Rankin Inlet	160	52.00	32.5	107.00	66.9	.29	3.625	.54	6.75
	Whale Cove	208	77.00	37.0	135.00	64.9	.34	3.269	.68	6.538
Chesterfield Inlet	Coral Harbour	345	106.00	30.7	142.00	41.2	.55	3.188	.70	4.058
	Rankin Inlet	57	25.00	43.9	35.00	61.4	.15	5.263	.17	5.965
	Whale Cove	105	42.00	40.0	65.00	61.9	.20	3.809	.31	5.905
Coral Harbour	Rankin Inlet	288	94.00	32.6	142.00	49.3	.52	3.611	.70	4.861
	Whale Cove	336	119.00	35.4	170.00	50.6	.60	3.571	.85	5.059
Rankin Inlet	Coral Harbour	473	155.00	32.8	183.00	38.9	.76	3.214	.91	3.848
	Whale Cove	48	25.00	52.1	28.00	58.3	.11	4.583	.14	5.833

Source: Calm Air Ltd.
Effective April 11, 1977

TABLE 29

Expenditure Breakdown for Baker Lake (in thousands of dollars)
Under Terms of the Arctic Air Facilities Policy

Category		Past Cost	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	Forecast Period	Total
Equipment	Capital	343.4		320.6	370.0	35.0			100.0	1169.0
	Operating Costs	47.0	5.2	2.5	5.0					59.7
Buildings	Capital	185.0	82.2	66.0	150.0	100.0				583.2
	Operating Costs		5.3	4.0	15.0	10.0				34.3
Vehicles	Capital	73.7	102.0	218.0					109.5	503.2
	Operating Costs			0.6						.6
Other Services	Capital			221.0	100.0				500.0	821.0
	Operating Costs	49.0		7.0	10.0				5.0	71.0
Total		698.1	194.7	839.7	650.0	145.0			714.5	3,242,000

Source: Five Year Plan, 1976
Transport Canada
Winnipeg

TABLE 30

Expenditure Breakdown for Chesterfield Inlet (by thousands of dollars)
Under Terms of the Arctic Air Facilities Policy

Category		Past Cost	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	Forecast Period	Total
Equipment	Capital		20.0	149.0	276.0	40.0				485
	Operating Costs				4.5	3.0				7.5
Buildings	Capital				90.0	60.0				150.0
	Operating Costs				15.0					15.0
Vehicles	Capital				20.0				75.0	95.0
	Operating Costs				.6				4.0	4.6
Other Services	Capital	50.0	575.0	603.6	8.6					1237.2
	Operating Costs				9.4					9.4
Total		50.0	595.0	752.6	424.1	103.0			79.0	2,003,700

Source: Five Year Plan, 1976
Transport Canada
Winnipeg

TABLE 31

Expenditure Breakdown for Coral Harbour (by thousands of dollars)
Under Terms of the Arctic Air Facilities Policy

Category		Past Cost	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	Forecast Period	Total
Equipment	Capital	249.0	6.8	210.2	210.5					676.5
	Operating Costs	39.0	4.5							43.5
Buildings	Capital	100.0	84.0			189.0	110.0			483.0
	Operating Costs	50.0		20.0		2.5				72.5
Vehicles	Capital		58.0	94.5	199.5	63.0			19.0	434.0
	Operating Costs		0.6							.6
Other Services	Capital	150.0			15.0	100.0			50.0	315.0
	Operating Costs	.5			5.0				.5	6.0
Total		588.5	153.9	324.7	430.0	354.5	110.0		69.5	2031.1

Source: Five Year Plan, 1976
Transport Canada
Winnipeg

TABLE 32

Expenditure Breakdown for Eskimo Point (in thousands of dollars)
Under Terms of the Arctic Air Facilities Policy

Category		Past Cost	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	Forecast Period	Total
Equipment	Capital	32		708						740
	Operating Costs	8.0	40.0	60.7						108.7
Buildings	Capital	115								115.0
	Operating Costs		15.0							15.0
Vehicles	Capital				209.5					209.5
	Operating Costs				.6					.6
Other Services	Capital	877.5			3.0					880.5
	Operating Costs				2.5					2.5
Total		1032.5	55.0	768.7	215.6					2,071,800

Source: Five Year Plan, 1976
Transport Canada
Winnipeg

TABLE 33

Expenditure Breakdown for Rankin Inlet (in thousands of dollars)
Under Terms of the Arctic Air Facilities Policy

Category		Past Cost	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	Forecast Period	Total
Equipment	Capital	86.1	10.0	383.8	524.5				696.0	1700.4
	Operating Costs	8.0	.5	16.0	166.4				7.0	197.9
Buildings	Capital	493.1	230.0							723.1
	Operating Costs	14.0								14.0
Vehicles	Capital	220.0							6.0	226.0
	Operating Costs	5.0			3o.0	3.1				44.1
Other Services	Capital	1468.6								1468.6
	Operating Costs	13.5			20.0					33.5
Total		2308.3	240.5	399.8	746.9	3.1			709	4,407,600

Source: Five Year Plan, 1976
Transport Canada
Winnipeg

TABLE 34

Expenditure Breakdown for Whale Code (in thousands of dollars)
Under Terms of the Arctic Air Facilities Policy

Category		Past Cost	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	Forecast Period	Total
Equipment	Capital	7.0	42.8	87.5	409.5				15.0	561.8
	Operating Costs		14.3	5.0	2.0				1.0	23.3
Buildings	Capital	290.0	53.6		115.0					458.6
	Operating Costs		24.0							24.0
Vehicles	Capital					23.0				23.0
	Operating Costs					3.6				3.6
Other Services	Capital	50.0	85.0	380.0	250.9					765.9
	Operating Costs									
Total		347	219.7	472.5	777.4	26.6			16.0	1,843,200

Source: Five Year Plan, 1976
Transport Canada
Winnipeg

TABLE 35

Education in the Keewatin (1976/77)

Location of School	Levels of Instruction	Number of Classrooms	Number of Teacher Assistants	Number of Teachers	Number of Students
Baker Lake	Kindergarten to Grade 9	14	7	14	282
Chesterfield Inlet	Kindergarten to Grade 9	5	2	5	93
Coral Harbour	Kindergarten to Grade 9	7	5	7	156
Eskimo Point	Kindergarten to Grade 9	11	6	12	243
Rankin Inlet	Kindergarten to Grade 9	13	8	11	269
Whale Cove	Kindergarten to Grade 8	3	3	3	59

Source: L.M. Langlois
Administrative Officer
Department of Education
Keewatin Region

TABLE 36

Law Enforcement in the Keewatin

Location of Detachment Office	Settlements Located Within Detachment Boundaries	Current Manpower		1976 Population Located Within Detachment Area	Crime Committed in Detachment Areas and Rate of Crimes Actually Solved By Year				
		Regular Constables	Special Constables (Inuit)		1972	1973	1974	1975	1976
Baker Lake	Baker Lake	1	1	900	24	25	38 (94%)	63 (83%)	42 (86%)
Cape Dorset	Cape Dorset Coral Harbour Repulse Bay	2	1	1,363	209	211	208 (93%)	191 (93%)	194 (93%)
Eskimo Point	Eskimo Point	1	1	875	23	46	56 (92%)	54 (91%)	48 (76%)
Rankin Inlet	Chesterfield Inlet Rankin Inlet Whale Cove	2	1	1,291	103	77	76 73%	128 (66%)	100 (85%)

Source: Compiled by author from material supplied
by R. W. Gertzen, Inspector
Officer In Charge
Monitoring & Analysis Branch
R.C.M.P. Headquarters
Ottawa

APPENDIX C

CHRONOLOGY OF TRANSPORTATION DEVELOPMENT IN THE ARCTIC

CHRONOLOGY OF TRANSPORTATION DEVELOPMENT IN THE ARCTIC

1920's	-	Airplanes equipped with floats and skis suitable for Arctic.
1921	-	Imperial Oil first uses airplanes in the Arctic.
1924	-	Commercial aviation begins in the Arctic.
1930's	-	Era of the 'bush pilot'.
1939-45	-	Airports constructed at Churchill, Coral Harbour, Fort Chimo and Frobisher Bay.
post 1945	-	Use of heavy-piston freighters in the Arctic.
1950's	-	Dew Line construction.
	-	Growth of Regional Air Carriers.
	-	Air Routes established into the Arctic.
1960's	-	Use of turboprop aircraft in the Arctic.
	-	Use of Twin Otter aircraft in the Arctic.
1965	-	Dehavilland Twin Otter is introduced into the Arctic.
1965	-	Survey done of transportation needs of Arctic communities.
1966	-	Regional Air Carrier Policy announced.
1967	-	National Transportation Act announced.
1970	-	Remote Airports Policy.
1970	-	Arctic Transportation Conference held at Yellowknife.
1971	-	Arctic Transportation Agency started.
1971	-	Northern Air Transport Study started.
1972	-	Martin Hartwell incident.
1972	-	"A Review of Air Transportation in the North" published.
1972	-	"National Policies for Northern Canada" announced.
1973	-	"Air Services for Arctic Communities" published.
1974	-	"Northern Air Policy Study" started.
1974	-	Arctic Air Facilities Policy announced.

1974 - Statements of Federal Transportation Policy concerning the Arctic.

1974 - Local Service Air Carriers.

1975 - New Transportation Policy stated by the Federal Government.

1976 - Joint Air Service Planning Evaluation Review was published.

APPENDIX D

ESTIMATES OF OPERATING CHARACTERISTICS FOR AIRCRAFT USED IN THE KEEWATIN

Estimates of Operating Characteristics for Aircraft Used in the Keewatin

	DC-3	TWIN OTTER	YS11	B 737-200
Year First Flown	1935	1965	1962	1967
Maximum Range	1510 miles	550 miles	680 miles	2370 miles
Maximum Take-off Weight	28,000 lbs	12,500 lbs	55,115 lbs	115,500 lbs
Cruising Speed	168 knots	182 knots	252 knots	500 knots
Accommodation	flight crew - 3 seating - 36 passengers baggage space	flight crew - 1 or 2 seating - 20 passengers limited baggage	flight crew - 2 seating - 60 passengers baggage space	flight crew - 2 seating - 130 passengers extensive baggage space
Estimate of Actual Operating Costs	$260.00/hour	$135.00/hour	$600.00/hour	$1300.00/hour

Source: Civil Aviation Branch
Transport Canada
Winnipeg

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