6 Transportation

Project Logistics

The transportation associated with the pipeline construction will have a broad range of impacts on the region. Pipeline-related freight moving north from Hay River will more than double the total volume carried on the Mackenzie River in 1972, the peak year to date. If the pipeline is to be completed according to schedule, the region will have to accommodate similarly increased transport requirements in passenger travel and in the use of small aircraft and helicopters.

The existing regulatory machinery of the federal and territorial governments and the plans put forward by the pipeline companies are not adequate to ensure that the necessary protection against adverse effects is given. Past events have demonstrated the inadequacy of regulatory mechanisms and planning to cope with boom-and-bust situations in the North, situations that have invariably involved transportation. During the oil and gas exploration boom of the early 1970s, aircraft flying at environmentally hazardous low levels could be controlled only where there was a project-specific basis for such control and when land use or similar project-specific regulations could be applied. In the same way, because of large annual variations in the volumes of freight, the planning of transport capacity has proved to be difficult. A part of the Mackenzie River fleet, expanded with government approval during the period of the oil and gas exploration boom, is now in storage.

In considering the logistics of the proposed pipeline in relation to the regional transport system, we must remember that construction of the pipeline is likely to be postponed for ten years. By that time, transport systems and pipeline construction techniques will probably have changed considerably, but we must base our present view of this problem on the proposals put forward by Arctic Gas and Foothills.

Any examination of the environmental and the socio-economic impact of the pipeline project must consider the specific location, scheduling and method of operation of transport facilities. Inadequacies in consultation, planning and site-specific studies for transport facilities and inadequate control of the facilities during operation could create seriously adverse effects on northern people, northern business, existing and future patterns of land use, fish and wildlife resources and archaeological sites.

The response of communities to plans for transportation facilities may range widely. Action communities, particularly Hay River, Fort Simpson and Inuvik, may want improved facilities, whereas others may not wish to have anything to do with wharves or stockpile sites.

1. During review of the design phase of the project, consultation with the people of each community regarding the facilities to be constructed or used at or near that community will be essential.

Construction of a pipeline will require the transportation of enormous volumes of materials and equipment from the South to many sites in the North. Arctic Gas' plans called for the movement of about 1.5 million tons down the Mackenzie River over a three-year period. The transshipment operation at a typical Arctic Gas wharf and stockpile site would include 2.6 million gallons of fuel, 45,000 tons of pipe, 500 tons of explosives, and 9,500 tons of miscellaneous camp facilities and heavy equipment. These materials and equipment will be moved by various means, and the necessity of transporting them will bring about improvements in and additions to the transportation infrastructure that exists at present in the Mackenzie Valley. New wharf sites will be built and others will be up-graded, and there will be new stockpile sites, both at wharves and at compressor stations, new airstrips and heliports, and new access roads to serve these and other facilities.

Both Arctic Gas and Foothills proposed to use the Mackenzie River and Arctic Ocean routes for heavy equipment supplies. During the shipping season, equipment and supplies will be off-loaded at wharves along these waterways and stored either at the wharf site or at the stockpile sites farther inland until the winter construction season begins. Both Arctic Gas and Foothills concede that use of the Mackenzie Highway, while not absolutely necessary to them, would be

an asset during the construction and particularly during the operation of the pipeline. Futhermore, witnesses from Alaska expressed the view, based on their experience with the oil pipeline built there, that an all-weather road is essential for pipeline construction and operations. Thus, whether or not the highway is extended is an important variable.

Both pipeline companies plan to make extensive use of snow roads. I have recommended that snow roads must be used if terrain damage is to be kept to acceptable standards. There are, however, two fundamental problems — scheduling and the sufficiency of snow. In Volume One, I described these problems and the techniques that have been proposed to overcome them and I consider them again in the chapter Terrain Considerations: Snow Roads.

I am particularly concerned by any plans that may be advanced to rely on helicopters rather than on fixed-wing aircraft. Helicopters have a limited freight capacity, they are much less able than fixed-wing aircraft to cope with bad weather conditions, and they are more likely to disturb wildlife. Contingency procedures will have to be developed for any plans that rely heavily on helicopters for pipeline construction and operation.

The proposals of Arctic Gas and Foothills for transportation are, in many respects, preliminary and tentative. Arctic Gas has drastically altered its logistics plan, first to accommodate the concept of multiple staging areas, then to accommodate a development plan that Hay River proposed for itself. Both pipeline companies have based their plans, at least in part, on overly optimistic and unproved (or invalid) assumptions, such as the capacity of the winter road between Fort Simpson and Inuvik to carry high levels of traffic; the ability of helicopters to fly under adverse weather conditions, and the availabilty of community wharf sites and airstrips. Neither Arctic Gas nor Foothills have offered any contingency planning. Both proposals depend on a variable but short summer shipping season on the Mackenzie River. Other transportation routes and modes of transportation are available, but the companies' planning has not reached the stage in which these other possibilities might be used to handle major freight movements.

Nevertheless, although the pipeline companies' proposals for transportation are still in a preliminary form, many of the measures that will be necessary to minimize the undesirable effects of pipeline construction and operation on the regional transportation system can already be discerned from them. They are described below.

Existing and Proposed Public Facilities

The difficulties in planning logistics stem in part from uncertainty about government programs, especially with regard to facilities that will be available to the pipeline company. For example, in their original applications, the pipeline companies assumed that the Mackenzie Highway would extend as far north as Fort Good Hope. During the course of this Inquiry, however, the federal government changed its highway program. Extension of the road is still included in the government's long-term plans, but the northern terminus of the highway will be, for an indefinite period, a location near Wrigley. However, work on the Fort Simpson-Fort Nelson Highway, which had been suspended, is now under consideration. This road could serve as an alternative to supply routes through northern British Columbia.

2. *Government should make an early statement as to its policy for the public facilities in the North that will be available to the Company. This statement should include the exact nature, location and standard of all public works that government or crown corporations will undertake, a definitive timetable for such works, and a description of the locations and the principles of cost-sharing for major new facilities or additions to existing facilities that may be required by the Company but that would be of value to the region after pipeline construction.*

At the same time the Company should make its own transportation plans known so that government can assess them and integrate them into long-range plans for the Mackenzie Valley. In this way, government can ensure that the natural and socio-economic environment is disrupted as little as possible.

At the hearings, Foothills stated that they hope to make considerable use of the Fort Simpson–Inuvik winter road and Edward Mirosh, Manager of Engineering, even declared that it "would serve the same purpose as the Mackenzie Highway" (F9746). The grades, route and width of this winter road limit the speeds and loads that can be carried on it, and, in its present form, the road does not appear to be suitable for the requirements of transportation during pipeline construction. Any proposal for using it should be looked at carefully, for it will probably then require up-grading and rerouting, with consequent environmental and socio-economic impacts.

3. *The government should explicitly declare its plans for an all-weather road in the Mackenzie Valley. If the government does not intend to continue the Mackenzie Highway, it should state clearly its policy with regard to the Fort Simpson–Inuvik winter road.*

Facilities

Transportation activities generated by pipeline construction will create both opportunities and problems. The project will provide useful additional facilities, such as the airstrips, wharves, warehouses and stockpile sites that the Company will have to install. But these facilities will have to be maintained. Moreover, they are an extension of non-native

activities into the northern frontier: they will increase the mobility of outsiders within the North and will interfere in many ways with traditional native activities.

Operations related to the construction and operation of the pipelines may disrupt the normal resupply of the communities along the Mackenzie River. The demands on transport during pipeline construction have been forecast only on a theoretical basis, and there is no information on the amount by which this demand may be exceeded. The National Energy Board has already pointed out that an additional volume of freight will be required to counter the problem of frost heave. Because it takes time to bring into service some forms of equipment used along the Mackenzie River, especially tugs and barges, the impact of excess demand on the existing transportation system and on the people who now depend upon it could be severe.

Problems and opportunities must be considered from the point of view of the users, the carriers and the affected communities. Each may be significantly affected, but in different ways. To reduce this complexity, I shall discuss pipeline-related transportation problems in terms of facilities and services.

From the standpoint of facilities, the construction of a pipeline in the North could be similar to earlier construction projects there related to national defence. Facilities were built with little or no thought given to their short- or long-term advantages. Many of these facilities, however, proved to be useful, and some of these are now essential to the regional transport system. At the same time, these legacies are not without their costs: the Alaska Highway, for example, has required expensive maintenance and rebuilding over the years, and some of the airports are poorly located and too big. A facility created by this means is often too expensive to keep, but too good to throw away.

The pipeline project will require considerable augmentation of existing marine and air facilities and, although present services may be improved and of use in the longer term, we must ensure that, as far as possible, new or up-graded facilities created to serve the pipeline will not be only an added burden to the North.

4. *The Company should provide all the facilities and equipment that are required to increase the regional transportation system's capacity to accommodate pipeline-related traffic, and so far as is feasible, in a way that will ultimately reduce the costs of serving normal traffic and that will improve the quality of service.*

This should be the general principle, but there will be problems of implementation unless there are also available sufficient details about the Company's plans, firm commitments by the government with respect to transport infrastructure, and at least the basic elements of a multi-modal plan for the infrastructure of transportation in the Mackenzie Valley. One special aspect relating to the improvement of transport facilities in general is the improvement by the Company of existing facilities. Improvement and expansion that do not disrupt the social and economic fabric of the community is clearly desirable, but they could lead to conflicts in demand between the Company and the communities.

5. *The cost of expanding or improving existing facilities to accommodate traffic related to pipeline construction shall be borne entirely by the Company and shall not be assessed against traffic to resupply the communities.*

6. *During the period of pipeline construction, community resupply traffic shall have priority wherever facilities are jointly used. Normal operating and maintenance personnel shall not be displaced in favour of pipeline employees.*

The remaining problem is one I mentioned earlier: a new or improved facility may be too expensive to keep, but too good to throw away. This problem can be alleviated if the pipeline facilities are integrated into transport plans for the region. Nevertheless, the question of who will maintain facilities that are not required regionally remains unanswered.

7. *The design for improving and expanding existing facilities and the way in which they are built should permit them to be readily scaled down when they are no longer needed for the pipeline project. All improvement and expansion should be of a high enough standard to ensure that long-run maintenance costs are minimized.*

In addition to these general recommendations, specific problems include the use of community airports, the development of pipeline staging areas in the southern part of the Northwest Territories, and the use and maintenance of roads.

Community Airports

Arctic Gas originally intended to make major improvements to the airports at Fort Good Hope, Fort Norman and Wrigley. These improvements would have had to be in place before pipeline construction began and would have supplanted those planned by the federal government as part of its Northern Air Facilities Program. Subsequently, Arctic Gas indicated that, in response to representations made at community hearings, they would locate the necessary airstrips away from these settlements.

Throughout my report, I have stressed that pipeline construction must not intrude on native communities against the wishes of the communities. This principle should apply to government agencies as well as to the Company. The revised Arctic Gas proposal to construct the airports away from communities, in response to local desires, is entirely appropriate; it should be taken as a model in similar situations and should be formalized as a process during the preparation of plans.

Staging Sites in the Northwest Territories

In the chapter on Action Communities, I discuss some of the problems and benefits that will accrue to these communities as a result of development. Two of these communities, Hay River and Fort Simpson, could be greatly affected by the choice of staging sites in the Northwest Territories.

Hay River, at the head of rail, is the more important of the two staging sites in the Northwest Territories. Some of the residents, local businessmen and the town council want it to retain this pre-eminence, and they have prepared a master plan according to which Hay River will be the staging site for all pipeline traffic. If this plan were implemented, it would cost more than $30 million and create dock space and other facilities that would far exceed the foreseeable needs of the community, the transportation industry, or indeed the pipeline company. Future maintenance costs of these large installations would also be high. Fort Simpson, the other staging site, is the present terminus of the Mackenzie Highway for all practical purposes. Fort Simpson has not actively sought to expand its transport facilities, but business has gone there both because of its position at the end of road and because it has an enterprising barging company based there. Although Fort Simpson has not proposed plans similar to those of Hay River, it would like to retain at least its present share in the staging business and perhaps to expand it.

Both pipeline companies have proposed to establish a major marine staging area at Axe Point, a good natural site for such a purpose with enough flat land for associated facilities and fairly close to the Mackenzie Highway. Barge traffic going from Axe Point down the Mackenzie River would avoid the hazardous crossing of southwestern Great Slave Lake and the Providence Rapids. If this new staging area is built, Hay River and Fort Simpson will be able to handle all of the regular traffic, and the normal community resupply requirements will not be disturbed during pipeline construction. Both pipeline companies propose to deactivate Axe Point when the project is completed, but that may not happen: not only will the investment in Axe Point be substantial, but the leases there are held by Northern Transportation Company Limited (NTCL), and it is likely to have its own interests in view rather than those of the communities. If Axe Point is not deactivated, continued use of its facilities could reduce by as much as 12 percent the transportation costs on freight that enters the Northwest Territories by truck for furtherance by barge. These savings would be effected at some cost to the Hay River economy and to the governments that would have to serve the new community at Axe Point and deal with the socio-economic problems of Hay River.

Two other factors complicate the picture. Hay River has a major economic advantage as a port because it is also the head of rail. But vessels moving down the Mackenzie River from Hay River must navigate the Providence and Green Island rapids above Fort Simpson. If the channel there is not dredged, and if costs for moving dry cargo by truck and air continue to decrease through better transportation techniques, the advantage for trucked-in dry cargo would pass to downstream locations, such as Axe Point and Fort Simpson. Hay River would maintain its superiority only with respect to petroleum products, which arrive by rail in bulk. Petroleum products account for about half the freight moved on the Mackenzie River. If indigenous natural gas replaces imported petroleum for heating and electrical generation, transport requirements and associated facilities will be drastically changed.

The solution of problems related to staging sites must be sought in a long-term plan for transportation facilities in the southern part of the Northwest Territories. However, such a plan cannot be drawn up until native claims have been settled and until decisions are taken regarding the use of indigenous energy supplies and the dredging of shallow areas in the Mackenzie River.

Although I cannot settle the controversy over staging sites, I can recommend that the following steps be taken toward achieving a resolution.

8. *Government should develop a plan for transportation facilities in the southern Northwest Territories that takes into account both energy supply and river dredging.*

9. *The Company should not be permitted to construct facilities at Hay River or Fort Simpson that do not conform to the principles of the government's transportation plan.*

10. *Facilities that will not be required to support the demand for transport in the Mackenzie Valley during the foreseeable future should be constructed away from communities and should be deactivated on completion of the project. To ensure that such deactivation takes place, the federal and territorial governments should hold as crown land, until they are required, all potential port sites between Hay River and Fort Simpson and reacquire all such sites that are now leased. (The NTCL leases at Axe Point expire between 1978 and 1982). In addition, the federal government should control any roads that extend from the Mackenzie Highway to potential port sites.*

Roads

The major effects of pipeline-generated traffic on roads are maintenance costs and dusty conditions. Evidence from Alaska indicates that there was a substantial increase in maintenance costs on some state highways because of increased traffic on them during pipeline construction and, in some places, highways had to close daily for extended periods so that they could be maintained. Construction of a pipeline along the Mackenzie Valley will be based on river transport rather than on road transport, so the impacts in Canada, although similar, will probably be less severe. In the Yukon Territory and Northwest Territories, government revenue generated from fuel taxes and licence fees approximately

balances the costs of road maintenance. If care is taken to maintain this balance, maintenance costs should not pose a problem. However, the time required to carry out maintenance activities may well become a problem.

11. *Before construction of the pipeline begins, permanent roads that will be used for project purposes should be reconstructed to a standard commensurate with the traffic that is expected on them during the construction period. The Company should bear the cost of any reconstruction that exceeds foreseeable local needs. Where the reconstruction represents an acceleration of planned improvements, the Company should bear the cost of the acceleration.*

12. *The territorial government should develop a highway maintenance policy for the period of pipeline construction that will give adequate consideration to the Company and to residents of the Northwest Territories.*

Except for a few short paved stretches, northern roads are surfaced with gravel. In dry, unfrozen conditions, vehicles passing over them raise great clouds of dust; meeting or overtaking a vehicle in these conditions is unpleasant and dangerous. Dust abatement through the application of calcium chloride is carried out where traffic warrants it and, if higher traffic levels are reached, the road is paved. According to present policy in the Northwest Territories and subject to the availability of funds, dust abatement is introduced when traffic reaches 250 vehicles per day, and the road is paved when traffic reaches 500 vehicles per day. Application of calcium chloride is considered to be a maintenance expense, and it needs no special consideration beyond that given above to road maintenance generally. Paving, on the other hand, is a capital program. It would be wrong to charge the total cost of paving a road to the Company, if use of it by a few vehicles caused the arbitrary number of 500 vehicles per day to be exceeded.

13. *If traffic is forecast to exceed 500 vehicles per day during pipeline construction, the road should be paved before pipeline construction begins. The Company should bear the full cost of any paving that would not be required in the foreseeable future; where paving represents an acceleration of planned improvements, the Company should bear the cost of the acceleration.*

In Alaska, much of the highway north of Valdez had to be rebuilt because of frequent use by heavy vehicles during the period of pipeline construction. Permanent roads in northern Canada might require similar work after construction of the pipeline is completed.

14. *After pipeline construction is completed, the Company should be required to restore the highway system in northern Canada to its previous standard. The amount of reconstruction and major maintenance to be carried out should be specified by government, and the work should be completed within three years of the date that gas begins to flow through the pipeline. The Company shall bear the cost of this work.*

Services

The completion on schedule of the proposed pipeline will depend on a transport system that operates with clockwork efficiency. The pipeline companies have stated that they would rely on dedicated services, which they would provide for themselves to whatever extent might prove necessary. It seems clear that the Company will have to provide at least some of their own transportation to avoid overstraining the existing services.

Although probably the basic requirements of the Company can be predicted and handled by the existing transport system, emergency situations will no doubt have to be accommodated. They will include emergencies during pipeline construction and during pipeline-related activity, such as government monitoring, gas plant construction, and oil exploration. There will also be increased demands by northern businesses that are responding to pipeline opportunities and increased spending by Mackenzie Valley residents based on income derived from work associated with the pipeline. The transport system must continue to meet the normal demand of northern communities, but there are justifiable fears that emergencies may cause a shortage of freight and of air transport capacity and drive the present rates upward.

SURFACE FREIGHT CAPACITY

The tug-and-barge system, which is the lifeline of the communities down river from Fort Simpson, will equally be the lifeline for pipeline and gas plant construction and for oil and gas exploration. Because NTCL, a crown corporation, has a near monopoly of the freight business along the Mackenzie River, the situation may not be difficult to control.

15. *Northern Transportation Company Limited should be directed to give first priority to the delivery of shipments to resupply the northern communities. NTCL should also set a guaranteed delivery schedule for any dry cargo and for emergency shipments of bulk petroleum assigned to it.*

I make the following recommendation to ensure that emergency requirements of the project do not disrupt the normal resupply of the communities.

16. *Whenever the Company or its subcontractors unexpectedly require transport service, the use of which would mean the withdrawal of service from territorial residents, the Company should be responsible for the full cost of providing emergency replacement service to communities. The replacement service (for example, aircraft to replace water transport) should be provided through the Agency after consultation with the Company.*

The problem of pipeline-related activities remains unsolved, and it should not be underestimated. Between 1971 and 1972, barge traffic on the Mackenzie River increased more than 40 percent because of increased oil and gas exploration in the Mackenzie Delta. The barge traffic that is related to hydrocarbon exploration and development should be integrated with the traffic for pipeline construction.

17. *All items of freight destined for the oil and gas industry in the North that weigh more than 100 pounds should be forwarded by the Company, through a joint-industry transport group.*

Such a group would ensure that critical development-related and construction-related shipments do not compete with discretionary shipments related to exploration and that the ultimate allocation of priorities for the hydrocarbon sector is not left to the carriers.

I am not impressed by arguments about the difficulty of distinguishing between shipments for the oil and gas industry and shipments for community resupply. Cargo destined for Swimming Point is cargo for the oil industry, whether it is shipped by Gulf Oil or by a food wholesaler. Nevertheless, some cargo ultimately destined for hydrocarbon activities may be handled through the communities. This is not of great concern, because such routing will benefit business in the northern communities.

The problems of truck freight have received somewhat less attention than those related to barge freight. However, the potential problems are just as great for communities, such as Yellowknife, Rae-Edzo and Fort Simpson, that rely on truck transport, and for communities, such as Fort McPherson and Inuvik, that will become more dependent on this mode of transportation if the Dempster Highway is completed. As with barge freight, the problem of truck freight could be solved by the use of a crown corporation.

18. *The three previous recommendations should also apply to NTCL's subsidiary, Grimshaw Trucking and Distributing Ltd. To ensure that this corporation can carry out its task, it should be granted temporary authority to operate in the Yukon.*

In making these recommendations, I have been concerned about effects on local businesses, especially on trucking businesses, which, because of low capital requirements, lend themselves to northern entrepreneurship. The thrust of my recommendations is to ensure a base level of service rather than to establish monopolies responsible for carrying out the resupply of communities. If NTCL and Grimshaw Trucking are required to carry only the traffic that is offered to them, the field will be held open for northern transport businesses to compete, if they wish to do so.

AIR PASSENGER AND AIR FREIGHT CAPACITY

The problems related to the availability of air services differ from those associated with freight services in at least two ways. First, because both companies plan to use dedicated air services, the problems of air freight capacity — indeed, the problems of the availability of air services in general — are less likely to be caused by the Company's actions than by the boom in related activities, such as oil and gas exploration. Secondly, there are two distinct parts to air services: mainline jet service to the action communities, and the use of small aircraft, in many cases on an irregular basis, to native communities. It is difficult to separate vital air services from those that may be said to enhance the quality of life. I do not consider this distinction useful in a northern context; I believe that transportation services, whether in support of real or perceived needs, must be as readily available to northern residents as, for example, health care.

19. *Northern residents shall have priority as passengers and for cargo on mainline flights that follow a published schedule for up to 12 hours before flight time.*

20. *To ensure that air services to small communities are not affected, carriers providing non-scheduled unit-toll services shall be required to convert to scheduled unit-toll service during the period of pipeline construction, and northern residents shall have the same 12-hour preference on these carriers as well. The scheduled service should be at least as frequent as the service that is in effect when the National Energy Board grants a certificate of public convenience and necessity.*

RATES

Many northerners fear that pipeline construction and related activities will create a supply shortage and exert upward pressure on rates or cause the withdrawal of common carrier services, if they convert to private or contract carriage. Previous recommendations should make the latter alternative unavailable. The problem of increased rates, however, is more difficult because the carriers will argue that they must be able to pass on costs caused by pipeline-induced inflation. The effect of passing on these costs, of course, will be an inflationary spiral, with costs and prices chasing each other.

21. *Because of the pervasive effects that the means of transportation have on all aspects of life in northern Canada, I consider a freeze on transportation rates to be an essential and integral part of a program to control inflation in the North during the period of pipeline construction. Legislative authority to control rates already exists. The basic philosophy of the freeze on transportation rates is that only increases in fuel costs, depreciation costs on the acquisitions of new equipment not related to pipeline activity, and wages up to the national average could be passed on through rate increases. The Company must be held responsible for other costs and must ensure that the carriers' financial positions do not deteriorate from what they were when the certificate of public convenience is issued.*

It would be unfair to the Company, however, to leave the above provisions entirely open-ended.

22. *To ensure prudence on the part of the carriers, the Agency should designate which northern carriers may be eligible to participate in the program to control rates described above. The Company should have the right to appeal to the Agency if it believes that excessive costs are caused by imprudent or inefficient practices by a carrier.*

23. *When construction of the pipeline is completed, the freeze on transportation rates should be reviewed. Any subsequent increase in rates must be related to general rate increases in southern Canada.*

POSTCONSTRUCTION PROBLEMS

After rates, surplus vehicles, particularly tugs and barges, will be the major transportation problem in the postconstruction period. Trucks, because of their short life, and aircraft, because of their mobility, present no significant problems. However, when the two peak shipping seasons proposed by the pipeline companies are over, there will be a large surplus of floating equipment that was specifically designed for operation on the Mackenzie River and that will be useless during years of normal shipping. Arctic Gas have estimated that $57 million will represent 80 percent of the amortized cost of the 13 barge sets they will require. Only another major construction project, such as an oil pipeline, would give this equipment more than salvage value.

There are two fears with respect to this equipment: first, a large part of its cost may find its way into increased rates for the resupply of communities; and secondly, the equipment may find its way into contract or private carriage, thereby destroying the economies-of-scale that exist in the present system of near monopoly by a crown corporation.

24. *Project-related barging equipment should be costed as part of the pipeline project and controlled by the Company. In turn, the Company should be enjoined from disposing of this equipment under ordinary circumstances except to a common carrier company who had prepurchase licencing approval from the Canadian Transport Commission. To gain such approval, the carrier should have to demonstrate public convenience and necessity as defined under the federal* Transport Act.

Reference was made above to disposal of the equipment under ordinary circumstances. However, it is possible to foresee extraordinary circumstances — the construction of an oil pipeline. To accommodate such a situation, it would also be appropriate to permit the Company to dispose of its equipment in any manner that met the approval of the Minister of Indian Affairs and Northern Development.

Communications

Communications, although equally as pervasive in the socio-economic environment of northern Canada as transportation, are not nearly as visible. This may be because high-speed communications are recent phenomena in the North: only a relatively few years ago the airplane that brought in passengers, freight and mail represented the most common method of communications. Until fairly recently, the only voice communications along the Mackenzie Valley were those set up by private organizations or government agencies to serve their own requirements. Canadian National Telecommunications, the common carrier for the region, has systematically been expanding public facilities to make the services there comparable to those available in southern Canada. Despite major and rapid improvements in various phases of communications, unique features in the North have made expansion difficult. The market area is small and does not generate sufficient revenue to support the high cost of technologically advanced systems. As a result, cross-subsidization from revenues generated in the South and assistance from the federal government through such programs as the Northern Communication Assistance Program has been necessary.

Operations of the pipeline will offer little opportunity to improve public facilities because the systems proposed by the pipeline companies cannot be fully integrated into community service. Both the satellite system favoured by Arctic Gas and the terrestrial system favoured by Foothills are to be private, dedicated systems. Improvements could be made during the construction phase, however, because the telecommunications system will require expansion to support both the general increase in economic activity and the specific needs of pipeline construction. Such expansion could be carried out so that private dedicated systems are kept to a minimum and can easily be interconnected with the public system.

25. *The government should ensure that the pipeline project does not cause upheavals in telecommunications and that pipeline construction serves as a vehicle for improvement of telecommunication services for all residents of the North.*

Telephone and Business Communications

During construction of the trans-Alaska pipeline, telephone systems in Alaska were unable to cope with the demand; indeed, they were barely adequate before pipeline construction began. During construction, the systems bogged down, not because of excess use by the pipeline company, which had its own telecommunications system, but because activity in the state increased generally. At Valdez, for example, a person might have to dial 80 or 90 times to complete a telephone call.

26. *To avoid the problems caused by an inadequate telephone system in northern Canada, the government should establish contingency plans for expansion, based on anticipated traffic demand patterns.*

We must also consider the communications requirements of businesses in northern Canada. Because the market for advanced telecommunications services in the North is small and scattered, these services have been available to northern businesses only slowly. Telex, for example, is still not available in many communities. During pipeline construction, small businesses in the North will be faced with a wide range of opportunities; it would be unfortunate if they had to let these opportunities fall to large, non-resident firms because communications techniques were unavailable or because their financial resources were inadequate to order specialized services on a dedicated basis.

27. *To ensure that improvements and advances in telecommunications are provided, as far as possible, by the common carriers and broadcasting companies, and to ensure that the dedication of services is kept to a minimum, the federal government policy in this regard should continue in the North.*

28. *Improvements and expansion should be carried out in advance of construction to ensure that common carrier services are not relegated to a low priority position and thus possibly not become available generally until pipeline construction and induced demands have levelled off.*