

7. Environmental Aspects

AGRICULTURE

The Commission heard a great deal of evidence, and much public attention has been given, to the claim that an airport at Pickering would remove 18,000 acres of prime farm land, from the agricultural use which it is claimed is a necessity for the central Ontario region.

The facts appear to be very much to the contrary.

At the date of the expropriation, of the airport site, less than 50% of the site was either actively producing crops or used as pasture lands of any kind.

Creeping urbanization and the developers' push to the north and east of Scarborough and Markham had already heavily impinged upon the area. There was considerable evidence that the land was ripe for speculation for ultimate urban uses.

Over one-half the land area on the site was, at expropriation, either in the hands of developers or city residents who "week-ended" in the Pickering area.

The withdrawal of land from agricultural use in favour of development for a multitude of urban purposes is a major problem in Southern Ontario. This problem is accentuated by the purchase of property by city dwellers as "hobby farms" and by the fact that much land is purchased by speculative interests long in advance of any real need of the land for urban uses. Thus, land which still has a rural appearance often has had its agricultural productivity seriously reduced.

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The Pickering site itself provides a good example. In spite of its excellent soil and climatic conditions, its actual agricultural productivity had fallen below much less favoured regions. The withholding of land for a single special urban use such as the Pickering Airport would be nothing more than an ineffective token; particularly as approximately two-thirds of the 18,000 acre site can be used into the indefinite future for intensive agricultural purposes and could outproduce the entire site as it was used immediately prior to expropriation. Land use planning on a provincial basis, backed up by strong legislation, would appear to be the only solution to this serious and growing problem.

Notwithstanding the above, it is imperative that any airport be developed to permit as much agricultural activity as possible on the site. The fact that airports and agriculture are compatible has been amply demonstrated in Canada as well as in other countries. For example, information regarding agricultural land use within the boundaries of some existing Canadian International Airports is summarized as follows:

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| Toronto I.A. | Approximately 1,200 acres of the 4,272 acre site are used for agricultural purposes. Half the land is used for pasturing purposes while the other half is used for growing soybean, barley and fall wheat. |
| Ottawa I.A. | Approximately 1,100 acres of the 5,110 acre site are used for the production of root crops, hay and small grains. |
| Winnipeg I.A. | Approximately 1,300 acres of the 3,770 acre site are used for the production of cereal crops. |
| Vancouver I.A. | Approximately 510 acres of the 3,620 acre site are used for the production of hay. |
| Victoria I.A. | Approximately 448 acres of the 1,100 acre site are used for the production of hay. |

- Edmonton I.A.** Approximately 6,100 acre of the 7,600 acre site are used for agricultural production. Actual crops include alfalfa, wheat and barley.
- Calgary I.A.** Approximately 2,137 acres of the 4,222 acre site are used for the production of hay and for pasturing.

In some European countries where the shortage of land for agricultural purposes is more acute than in Canada, even more intensive cultivation of airport lands has taken place. Members of the Commission were able to observe this personally at Kastrup and Schipol Airports in Denmark and the Netherlands, respectively. Here, all land not needed for terminals, hangars, and other service buildings is utilized within at least 100 – 150 feet of the runways. Crops such as hay, grain, potatoes and sugar beets were observed between the runways. Hay was being mowed right up to the very edge of the runways. Intensively cultivated market gardens and greenhouses were found within 500 – 600 feet of runways. Schipol Airport points to a highly successful dairy operation and claims that no negative effects on the cattle have been observed from aviation activities.

Certain crops may attract birds which in turn pose a potential hazard to airplanes. Aircraft safety regulations do not, at present, specify what crops may or may not be grown within airport boundaries. However, the Ministry of Transport provides land use guidelines, based largely on past experience, for crop production on Canadian airports. The following crops are considered to be compatible with airport operations:

- Root crops
- Grasses and legumes for hay production
- Flax
- Soybean
- Fall rye, fall wheat, spring wheat
- Barley and other cereal grains.

Because of their attraction to birds, cultivation within the airport boundary is not permitted for the following:

- Peas
- Corn

Oats
Sunflowers.

These guidelines have been drawn up for existing Canadian International Airports which range in size from 4,000 — 7,500 acres.

A fully developed airport at Pickering would occupy no more than 6,000 acres leaving approximately 12,000 acres. These acres could be used indefinitely for intensive agricultural purposes and, because of their distance from the actual aviation activity, few constraints would appear necessary on the crops cultivated. Some 1,500 — 2,000 acres could be used for a variety of agricultural purposes within that portion of the site where actual airport activities will take place, although some crops might have to be excluded. In some cases, it would appear that careful agricultural techniques would make possible some crops which are now considered unacceptable.

It is anticipated that neither farm houses nor farm buildings would be developed within the actual airport boundary but that land would be cultivated by farmers who live in the neighbourhood. Thus, the workers would be exposed to noise only during the relatively short time when the land was being prepared and the crops harvested.

CONCLUSION re AGRICULTURAL USE

Agriculture and airport activities are compatible. Approximately 12,000 acres of the Pickering site could be used for agricultural purposes for the foreseeable future with few limitations on the types of crops, and no ill effects on common farm animals. Another 1,500 to 2,000 acres within the actual area to be used for airport activities could also be used for agricultural purposes. With the assurance that this land would be available for agricultural purposes in the long term, the productivity of the land could be raised, so that its output would exceed, by a considerable margin, the entire site as it was used immediately prior to expropriation.

The Commission adopts the summary of the examination of the area carried out for the Ministry of Transport, Canada, by Agrology Consultants Limited in March, 1974. An extract of its conclusions is as follows:

“The selection of the New Toronto International Airport site at Pickering has been criticized on the grounds that significant quantities of agricultural produce would be permanently lost and that the airport development would destroy a highly productive, viable and intensive agricultural industry.

The findings of this examination do *not* substantiate these objections to the selected site. While the airport site is physically capable of highly intensive agricultural enterprises, this high potential has not been realized for many years prior to the airport announcement. Relative to non-urbanized areas of similar physical capability, the airport area farms have experienced significant declines during the 1961-71 period.

This decline is evident from decreases in livestock numbers, decreases in farm sizes, decreases in farm and improved acreages and increasingly unfavourable economic performance indices. Net farm income generated on airport farms in 1971 justified farm real estate values of approximately \$450 per acre. Open market prices, on the other hand, were at least five times as high...

All land market activities prior to the airport announcement reflect a firm belief in the imminent termination of agriculture and an equally strong confidence in the non-agricultural development potential of the area.

A preliminary examination of potential agricultural uses on the airport site indicates that 1971 production and income can be readily surpassed during all phases of airport development and operation. With proper management, suitable leasing arrangements, farm reorganization and active participation of agricultural planning agencies (ARDA, OMAF and local farmers), the airport could be converted into, for example, a highly productive dairying area.

The airport development need not destroy this high quality farmland. In fact, the construction of the airport provides the opportunity for permanently maintaining most production above 1971 levels and, more generally, for reversing the pre-announcement agricultural deterioration trend.”

Such agricultural use can be implemented by leasing to farmers the lands not required for airport activities.

NATURAL ENVIRONMENTAL FEATURES

Because the proposed airport site has been heavily used in the past for agriculture, there are few environmental features now in a natural state. However, there are some excellent woodlots which together with West Duffin Creek and its streamside forests have high aesthetic value and provide important habitat for wildlife. As a stream of relatively high water quality important in the rejuvenation of Lake Ontario, Duffin Creek must be classified as a unique environmental feature whose integrity should be maintained, even at considerable cost.

The natural topographical features of the site divide it into three regions. Region 1 lies to the west of the Stouffville branch of West Duffin Creek, Region 2 lies to the north of the east-west road through Claremont and Region 3 is the remaining segment of the site. Region 1 has been heavily utilized for agriculture in the past and should be continued to be used for this purpose. Region 2 is cut up by a number of tributaries to the main streams, is picturesque and contains most of the best woodlots. It should be used as mixed conservation and agriculture areas.

The runway concept, denoted 1-5 by the Ministry of Transport, Canada, could be designed and constructed so as to do very little damage to the west branch of Duffin Creek. If the Altna Tributary were diverted into the Stouffville Tributary, approximately 2 miles upstream from where they now link up, concept 1-5 would require only one crossing of the creek by a runway. As the actual runways might well be somewhat shorter than maximum length now quoted, it is possible that no runway crossing of the stream would be required. There appears to exist the possibility that the major stream could be left relatively untouched except for the removal of some of the taller trees in certain areas.

METROPOLITAN TORONTO ZOO

From the evidence, the Commission has concluded that there can be a satisfactory accommodation between the airport and the Metropolitan Toronto Zoo.

ARCHEOLOGICAL SITES

The timing of the airport development is such that the two archeological sites, currently identified, can be completely excavated and thoroughly studied before there is any disturbance by construction.

ADJACENT CONSERVATION AREAS

It is difficult to estimate the negative effects from aircraft noise. On the one hand, users of the conservation areas will always be out in the open and therefore, exposed to the full noise. On the other hand, they will not use the facilities after dark; so the heavy penalty for night flights built into the NEF contours is irrelevant. One might anticipate that there will always be significant impairment of the users' enjoyment of the Claremont Park Conservation Area. The situation with regard to Goodwood Forest and Wildlife Area and Greenwood Conservation Area is less serious.

BIRDS

Evidence was received respecting concern about birds interfering with flight operations, especially the Herring Gull population in the Pickering area and the nesting site of the Little Gull near Oshawa. The evidence from Ornithological Studies, in depth, which was put before the Commission and subjected to cross-examination, established that there is no basis for any concern that birds will interfere with flight operations if an airport at Pickering is built.

**BUILDINGS PRESENTLY WITHIN PROPOSED AIRPORT
BOUNDARIES OF ARCHITECTURAL HISTORICAL
SIGNIFICANCE**

There could be a programme implemented to move buildings of an architectural historical significance, presently scattered throughout the proposed airport site, to an area on the site and to locations off-site which would not be affected by noise disturbance from aircraft operations. These buildings could be refurbished and put to use for commercial, residential and other purposes.

8. Economic Impact

Speaking generally, from the whole of the evidence, and taking "judicial notice" of what the forces of the market have caused, as exemplified by what has taken place in the United States and Europe where major airports have been established, it is patent that an airport and all the economic elements that are at work at an airport bring economic benefits to a community. An airport causes many jobs to be created. It provides transportation which attracts other industries and adds business revenue to the regional tax base. Inadequate capacity and access to an airport will curtail and abridge business activity and development, which are dependent on efficient and reliable air service. As a further consequence, tax revenue will also be curtailed and abridged.

It is also patent that it is absolutely essential to the strong economic base of the Province of Ontario that it possess an adequate air transportation system. It is also patent that any modern, progressive, vibrant metropolitan area within a province, such as the Toronto Metroplex area, requires substantial and efficient servicing by airport facilities, especially in its industrial and commercial sectors to permit the economy of such sectors to reach maturity.

In analyzing the economic impact on the Toronto Metroplex area of an adequate, substantial and efficient airport service, certain facts are clear.

An airport service is the vital connection between the Toronto Metroplex area and the nation. It serves as a substantial local employer of air crew, cargo employees, terminal administration and maintenance employees. It is also stimulant to industrial and commercial development in the surrounding area bringing new employment opportunities.

The Toronto Metroplex connection to the national transportation network is of major importance because the Toronto Metroplex economic well-being is, in a large measure, dependent on the value of the goods and services it can supply to other areas in Canada. The demand for basic goods and services in the export sector of the Toronto Metroplex economy creates jobs and payrolls that would not otherwise exist in the local economy. The creation of one export job begins a chain of events which is characterized and explained by economists using the phrases "employment multiplier effects", "income multiplier effects", and "total economic impact of basic activity".¹ The result is that the total economic impact resulting from a single job in the Toronto Metroplex area is many times greater than the value of that initial job.

In addition, initially there will be purchase of goods and services during the construction of the airport facilities, if built, and the commercial and industrial facilities that will be established near the airport which will have the economic impact of bringing very substantial income not only into the region, but also into the Toronto Metroplex area.

Speaking generally, there is a significant correlation between regional growth and the level of air service as evidenced by the Dallas/Fort Worth Airport Study by the Regional Science Research Institute of Philadelphia. It is clear from that study that

1. (see *Environmental Impact Statement Detroit Metropolitan Wayne County Airport study*.)

Employment Multiplier. Each basic job creates additional demands within the local economy. Examples of local service employment include the grocer, the plumber, and others selling professional and personal services. Based on prior studies, it is estimated that, in an area the size of Detroit metropolitan area, for each job created in the basic sector, there is simultaneously created a demand for 1.5 service jobs.

Income Multiplier. When a dollar from outside the area enters the income stream within the local economy, the person who receives it has a predictable propensity to save part of it and spend the balance. This expenditure becomes new income to the recipient who likewise saves some of it and spends the remainder. Consequently, the impact of these successive rounds of spending creates a total income within the local economy greater than the amount of the initial dollar. For an area the size of the Detroit metropolitan region, the income multiplier ranges between two and three.

Total Economic Impact of Basic Activity The income and employment multipliers taken together have an amplifying effect upon the income and jobs created by a basic activity. Assuming the average salary paid by airport enterprises (\$10,000) closely approximates the present average salary level in the Detroit metropolitan area, the basic and service sector payrolls can be taken together for purposes of analysis. Thus, one basic job plus the 1.5 service jobs created by it equal 2.5 jobs. These jobs represent a combined average payroll of \$25,000 (assuming a \$10,000 average wage). This \$25,000 payroll means the total income to the economy at two to three times the initial payroll income is between \$50,000 and \$75,000 annually. One basic sector job has, in other words an ultimate impact of five to seven and one-half times its own value (or an average of 6.25).

rapid growth industries concentrate in rapidly growing regions and that rapid growth industries tend to make heavy use of air transport.

Speaking specifically in relation to the Toronto Metroplex area, the evidence from study and research shows a close connection between the amount of Toronto Metroplex area employment in firms with branches or head offices in other cities, and the amount of business air travel. Fifty-four (54%) per cent of industrial employment in the Toronto Metroplex area is by companies with external affiliations, which are mainly growth industries. From a regional point of view, it is significant to note that in the Malton area alone the above figure is eighty-four (84%) per cent.

Again speaking specifically about the region in which the Pickering site is located, the evidence indicates that the proposed Pickering airport site is in Zone 1 of the Province of Ontario Toronto-Centred Region Design for Development; and that the "North Pickering Community" replaces the proposed Cedarwood and Brock developments.

As to economic impact on this region, the evidence, among other things, dealt with on-airport employment, the effect of the airport system on the distribution of people and jobs in the region, and the nature of the probable development in the region in which the proposed Pickering Airport is to be located, if built.

The Commission has carefully considered all this evidence and also has taken "judicial notice" of what the forces of the market have caused to be done in other places as previously mentioned in this section. As a result, it has come to the following conclusions:

First, the building and opening of the proposed new international airport at the site near Pickering would substantially influence the pattern of development in the Toronto Metroplex area by providing the area northeast of the present Metropolitan Toronto with a substantial development impetus, while at the same time reducing somewhat the development pressures to the west of Metropolitan Toronto. As result, the Province of Ontario goals in its design for the Toronto-Centred Region would be materially assisted.

Second, the growth in air travel, by such a new airport, if built, would be paralleled by a growth in employment opportunities available at such airport.

Third, the nature of the economic development around the proposed new airport at Pickering, if built, will probably be similar to that presently existing around Toronto International Airport, Malton, namely: (1) substantial hotel development; (2) the location of a large proportion of growth industries; (3) the establishment of industries with a large dependence on air transportation for their shipments; and (4) many of such industries would be branches of parent companies located outside Toronto, that is, in other Canadian cities or in foreign countries.

Fourth, initially, during the development and building of the proposed airport, on-airport employment and purchases of material will have a most significant economic impact on the region.

In sum, the Commission is of the view that if a new airport is established on the site near Pickering, its economic impact on the immediate region will be most substantial in terms of increased goods and services and its effects will be felt throughout the whole Toronto Metroplex area. Such economic impact will substantially assist in the implementation of the Province of Ontario's design for the Toronto-Centred Region and will be a major catalyst and impetus for development east of the Toronto metropolitan area. There are many other factors which will effect the final total economic impact. These include the manner in which, and how soon, adequate ground roadway access is built to service not only the new proposed airport but also the new proposed North Pickering Community; how the total area is zoned for land use so as to cause the manner and place where commercial and industrial and residential areas will be built up.

9. Energy Crisis

Because of the particular significance that the energy problems of the world to-day have for so many, the Commission wishes to make some comment upon this subject. The cost and availability of energy are going to be felt in the future in various ways, and with different weightings. It is very difficult for the Commission to make any statement that can be clearly established as unassailable. Yet, on the other hand, the current energy situation is going to have an impact on many economic activities in the future, at least until the changes in price works through the system, which may take several years. These economic repercussions surely will affect the number of persons who will travel by aircraft although it is very difficult to predict quantitatively the end result.

ENERGY COSTS

Some of the ways in which higher cost energy may affect air travel, are as follows:

1. As we have commented elsewhere, elasticity of demand will depend to a considerable degree upon the price of fares. The price of fares in the future can be affected by the cost of energy sources, particularly jet fuel, despite the fact that it has been argued that the proportion of the fare for air travel that is devoted to the cost of fuel is small in comparison to the other costs. If the resulting increase in fares is much greater than the general inflationary trend, one might expect some negative effect on air travel volume.
2. A shortage, or the higher cost of energy, also may affect the broad development of an economy. It seems apparent

that the propensity to travel is related to incomes. It is clear also that incomes are related to the virility and strength of the economy. In turn, the virility and strength of economy, particularly in an industrialized society such as that which we possess in Canada, is related to the availability, the supply and the price of energy sources. If in the future energy becomes less available than it has been in the past, or becomes a great deal more expensive, then this will have an influence upon the Canadian economy and, in turn, upon the members of the economy and, therefore, upon the travel propensity of the passengers. The strength of the economy unquestionably also will affect the volume and timing of cargo to be carried, and as well, one would presume, of the development of new aircraft techniques and new aircraft themselves.

3. If the economies of other countries are weakened by energy problems, it is probable that the amount of international travel would be reduced in Canada. That is to say, if the economy at the far end of international trips is not strong, there will be less reason for Canadian business men to use travel abroad. Also, the number of visitors to Canada from abroad probably would be reduced.
4. To a certain extent, direct communication can replace certain business trips and trips to see relatives. If travel becomes appreciably more expensive, and there are further developments of communication technology, there might be some swing away from air travel to the use of the various communications media.
5. Not all the influences will tend to reduce air travel; some may increase it. For example, automobiles are relatively inefficient in their consumption of fuel, and fuel costs represent a large fraction of their total operating costs. Also, in any serious shortage of fuel, its availability for automobiles is likely to be more uncertain than for airplanes. For these reasons, one might expect a shift away from long distance automobile travel to air travel.

For the past number of years, the price of crude oil in terms of its energy content has been substantially below the cost of other types of energy. This was brought about by the incredibly low cost

of production of Middle East oil. The O.P.E.C. countries have been successful in drastically raising the price of their crude and other producers have followed suit. This will change both the supply and demand. The supply will be increased, at least in the short term, because some unused existing wells and some new crude sources now will be economically competitive and brought into production. The demand will be lowered because of a switching to alternate energy sources which are now more attractive from a cost standpoint.

At the present time, world production of crude oil exceeds demand and a surplus is accumulating. In such circumstances, the price normally would be expected to decrease, but the O.P.E.C. countries have been able to keep it up by political action. It is difficult to say just where this will lead. However, one might surmise that the major price increases, as experienced in the recent past, are over for the time being and further increases will be more in line with the general inflationary trend.

FUEL AVAILABILITY

Although world production of crude oil exceeds demand at the moment, a great deal of current evidence indicates a growing discrepancy between world energy demands and the supply of hydrocarbon fuels which will become serious early in the 21st century. Hopefully, the demand will be reduced by a "conservation-ethic" — the current wastage in automobiles and in building heating is staggering. Also, significant switches to alternate energy sources will be made. Nevertheless, the supply of hydrocarbon fuels is finite and this problem must be considered.

Although not extremely rich in oil and gas by some standards, Canada is in the happy position of having supplies adequate for her own needs for the foreseeable future. This is not to say it is all easily available. Development of the tar sands (a proven resource) will require much hard work and tremendous capital investment. Although substantial reserves have not been found and proven yet in the Arctic basin and Atlantic Continental Shelf, the available evidence gives good reason to be optimistic that large amounts will be found.

Assuming that Canada has adequate supplies of crude oil, the question still remains whether sufficient will be used to provide jet

fuel to meet transportation demands. In the past, Canadian refineries have not produced all the jet fuel used in Canada and substantial amounts were imported. However, this was not caused by a lack of capability but by political-economic considerations comparable to the situation where we exported crude from Alberta to the U.S.A. while importing crude into Quebec and the Atlantic Provinces. At this time, it may be questionable whether the high aromatic content of syncrude from the tar sands prevents the preparation of acceptable jet fuel from this source but this is not an insurmountable problem anyway. Refineries are accustomed to blending crudes from different sources to obtain the desired characteristics in a product. Another alternative is to reserve the required amount of conventional crude for jet fuel production and use the syncrude as a substitute for the conventional crude.

Finally, one must ask if it is likely that Canada would give high priority to providing jet fuel. Some switching to alternate energy sources (e.g. gas, coal, nuclear derived electricity) is likely to be required but this is much easier for ground based facilities than for air transportation. For the following reasons it is expected that the Government of Canada would give high priority to jet fuel production:

- (a) Jet aircraft are efficient in terms of energy consumption for passenger transportation over long distances.
- (b) Canada's huge distance dictates the need for a high speed transportation system.
- (c) It is relatively easier to change other energy consumers to alternate energy sources.

Of course, the availability of jet fuel outside Canada is also important in considering the likely passenger volume at a Canadian international airport. The advent of the jet has brought about a vast increase in travel for pleasure as well as business, and a massive switch to aircraft for long distance travel. Air travel has reached the proportions where it is an important component of the economy in many countries. For these reasons, and others similar to those listed for Canada, it is believed that jet fuel production will be given high priority around the world.

TRANSPORTATION MODE EFFICIENCY

Transportation accounts for 33% of Canada's total energy consumption; so efficiency of energy use by the various transport modes is an important consideration. The road modes, including automobiles, trucks and buses, use approximately 16% of the total and pipelines and other transmission systems account for over 10%. This leaves water, air and rail modes which each account for less than 2% of Canada's total energy consumption.

There seems to be a great deal of misunderstanding about the efficiency of the various transportation modes. For example, it was asserted at one of the Hearings that train transport is many times more efficient than air travel in transporting passengers. As will be shown later, this is not correct; over long distances, the two modes are quite comparable for passenger travel. These misunderstandings seem to have arisen for various reasons, but two particularly important ones are that there has been confusion about the terms used to express efficiency, and cargo and passenger traffic have not been separated. For example, some of the terms used to express efficiencies include the weight of the vehicle, whereas one should only include the useful (i.e., passenger) weight that has been moved. The importance of separating passenger and cargo traffic lies in the fact that, although it is true in a general sense that the efficiency of moving cargo is higher than passengers, the differential varies markedly between modes so mixing the types of traffic can lead to very misleading results.

In comparing efficiencies of energy use for the various modes, it is convenient to use the concept of energy cost as the ratio of the work done in transporting the payload to the energy consumed during the process. The energy cost then emerges as a dimensionless number. For example, consider a 200 pound man who drives a distance of 20 miles in a car that averages 20 miles per gallon of gasoline. The useful work performed, measured in foot-pound units, will be the transport of the man over the 20 mile distance. The energy used in performing this work will be simply the energy content of the gasoline and the efficiency or energy cost is simply the ratio of the two. i.e. energy cost:

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$$\frac{0.75 \times 10 \text{ pounds/gallon} \times 19,000 \text{ BTU}^*/\text{pound} \times 778 \text{ foot-pound/BTU}^*}{20 \text{ miles/gallon} \times 5,280 \text{ feet/mile} \times 200 \text{ pounds}}$$

= 5.25

In this example, the energy cost is 5.25 – in other words, for every foot-pound of useful transportation work done, over five foot-pounds of energy are consumed performing the task. If the payload is increased, say by carrying another person of the same weight, then the value is effectively halved; if a third person is added the value reduces to about one third and so on.

The value described above is called the point-to-point energy cost – it does not take into account energy consumption not directly related to the 20 mile trip. In the case of the automobile, this overhead energy consumption would include such things as taking the car to the garage for maintenance or refueling, engine warm-up, idling during stops at signals, etc. Including this unavoidable energy consumption in the total produces a value called the system energy cost which is always higher than the point-to-point value. For the example given, the single 200 pound passenger in an automobile which averages 20 miles per gallon, leads to an energy cost of about 6. In the case of aircraft traffic, the system energy costs is approximately double the point-to-point energy cost.

Energy costs for the various modes will now be compared. These are all in terms of system costs and apply for a load factor of 65% except for the automobile.

Energy Cost for Passenger Traffic

TORONTO – MONTREAL RUN

DC 9	STOL ¹	TRAINS	BUS	AUTO	HIGHSPEED MAGNETIC LEVITATION
3.5	5	2	1	6 (one occupant) 3 (two occupants)	10

TORONTO – VANCOUVER RUN

747	DC-8	TRAIN
2.8	3.5	2.5

* British Thermal Units

¹ Estimated for DHC 7

Energy Cost for Cargo Traffic

TORONTO – MONTREAL RUN

DC-8	DC-9	TRAIN	TRUCK
3	3.5	0.04	0.4

TORONTO – VANCOUVER RUN

747	BEST AIR ¹	TRAIN
1.3	0.6	0.03

These figures were determined on the assumption that only passengers were conveyed. In fact, both trains and planes carry baggage and various cargos. The effect of considering cargo as well as passengers can be quite dramatic.

The wide-bodied planes can carry a great deal of cargo in addition to passengers, and in the case of the Boeing 747 for example, the energy cost of cargo and passengers is about 1.4 if it has a full load of cargo, and 65% of its rated passenger capacity.

It is clear from these figures that the large modern planes such as the 747 rival trains for fuel efficiency for passenger travel over large distances. Trains, on the other hand, handle passengers more efficiently over short distances and cargo over any distances. The real achiever in moving cargo, although it has not been shown in the tables, is the "super-tanker" which obtains energy costs below 0.005.

¹ Estimated for Boeing Resource Carrier

10. Air Cargo

The Commission heard evidence that at the present time the use of aircraft as a mode of moving cargo is in its infancy, although there has been a steady growth in the amount of freight carried by air. It is predicted that there will be a rapid rate of increase in the use of aircraft as a mode of moving freight and that larger tonnages will be moved by air.

There is an explanation as to the reason for such a great and rapid growth in air cargo in the future, even though this has not been the case in the past. In the past, there was a lack of consistency in schedules for aircraft movements for freight. The previous generation of passenger aircraft were limited in the amount of tonnage that could be carried with passengers. In order to carry greater amounts of cargo, airlines would have to incur the expense of buying larger aircraft which would be devoted exclusively to air cargo. There appeared to be an inability on the part of airlines to separate the economics of air cargo from the transportation of passengers and prove a profit.

The introduction of the large-bodied aircraft such as the DC-10, the B-747 and the L-1011 with huge cargo capacity has revolutionised thinking in the air transportation industry in respect to aircraft as a means of carrying freight. As a result of the cargo capabilities of the new aircraft, air cargo has become less expensive than in the past in relation to other modes for the shipment of goods such as rail and road transport. The introduction of the large-bodied aircraft permitted the use of containers for air freight shipment which has resulted in unit cost savings. In addition, there is a unit energy cost advantage, based upon a system energy cost, as more fully discussed under the heading "Energy Crisis", when the unit energy cost of a B-747 with a 70% load factor for passengers

and cargo is compared to a DC-8 or with a continental passenger train on a Toronto to Vancouver route. The respective unit energy costs are: B-747 — 1.4, DC-8 — 3.5, continental train -2.5, and for a combined continental passenger and cargo train — 1.3.

It is predicted that the large-bodied aircraft will exploit the cargo market by providing large tonnage capabilities, regular schedules, and a fast mode of transportation. It is also anticipated that once the advantages of aircraft as a means of transporting cargo are generally accepted, the air cargo market will exceed the passenger market. Once this occurs, the real challenge to the air transportation system will be to ensure that passengers are not abandoned in favour of cargo, as has been the case with ships and railways.

Evidence was adduced before the Commission by the Ministry of Transport, Canada, of a forecast of tremendous growth of air cargo in the central Ontario market. The Commission also heard testimony as to similar predicted growth rates of air cargo in the Chicago and Dallas/Fort Worth areas of the United States. The planner of the Dallas/Fort Worth Airport is so confident that the predicted growth rate in air cargo will be achieved that in planning the new Dallas/Fort Worth Airport, provision was made for two hundred gate positions for freighter aircraft, which gates will be constructed as required. In the United States, it is predicted that during the period 1970 to 1980, air cargo will increase at an annual rate of 18%, and that during the period 1980 to 1990 air cargo will increase at an annual rate of 15%, and that during the period 1990 to 2000 the rate of growth for air cargo will be 13% annually. The Commission heard similar predictions as to the growth of air cargo in its talks with representatives of the British Airports Authority, Aéroport de Paris and the Rome Airport Authority.

During the period 1961 to 1971, there has been a steady annual growth rate of 10% in air cargo at Malton from 21 million pounds in 1961 to 207 million pounds in 1971.

The Ministry of Transport has made forecasts as to the number of pounds of air cargo that will be carried during the years 1980, 1990 and 2000. The cargo forecasts were based upon data which showed the geographic location of the origins and destinations of air cargo shipments within the Toronto Metroplex. The shipments were then converted into pounds to provide an estimate

of overall distribution of cargo demands. The cargo demands were then assigned by city groups and directions. Estimates were made as to the amount of air cargo that would be carried in the cargo compartment of passenger aircraft, and the appropriate percentage of the total forecasted cargo was assigned to passenger aircraft for a particular direction, and the balance of the cargo for that direction was assigned to pure freighter aircraft. Accordingly, the number of pure freighter movements is related to the total movements by air passenger aircraft.

The Commission sets out in the following Table the forecast as to the pounds of air cargo that will be carried in each of the years 1980, 1990 and 2000 as well as the actual amount of air cargo carried in the year 1971.

<u>1971</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>
207 million lbs	925 million lbs	3 billion lbs	8 billion lbs

The forecast of annual and daily pure freighter movements which will carry air cargo, over and above that carried in the cargo compartment of passenger aircraft, for the years 1980, 1990 and 2000, as well as annual and daily movements in 1970, with the number of annual movements being designated as "A" and the number of daily movements being designated as "D", is as follows:

<u>1970</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>
A-1280 4-D	A-7,232 20-D	A-15,270 42-D	A-44,060 121-D

The total daily forecasts and annual forecasts for freight movements are divided equally between arriving and departing aircraft.

It has been noted, elsewhere in this report, that air freighter movements do not have any major effect on the scheduled peak hour demand as arrival and departure times for air freighter movements can be moved out of the scheduled peak hour demand. The only basic limitation on the movement of air freighter aircraft is the curfew imposed at Malton for arrivals and departures and any curfew that may be imposed at the other end of the flight.

However, shippers prefer a heavy concentration of flight operations during the night hours after the close of the normal passenger day and after shipping docks are cleared by pickup services bringing air cargo to the airport for trans-shipment.

There was testimony before the Commission that Canadian air carriers have experienced difficulty in filling the cargo compartment of passenger aircraft with freight. This is especially so in the case of an aircraft flying from the west to the east. Accordingly, Canadian air carriers do not see any material change in the future. However, this raises the question as to the extent that Canadian air carriers have pursued a vigorous policy to capture a share of the freight market in the past and the extent that they will pursue a vigorous policy in the future.

The Commission also heard testimony as to the development that is taking place in the United States in respect to the C-5A aircraft. The C-5A aircraft was developed originally for military purposes. It is now being adapted to civilian use. It is substantially bigger than a B-747. It can accommodate 6 Greyhound buses in the fuselage with considerable space above the buses for carrying other cargo. It can accommodate 5 railway tank cars with a capacity of 10,000 gallons of fuel per car. With full load, it has a range of 5,500 miles. Tests are being undertaken in the United States by representatives of Lockheed Aircraft, in conjunction with the Department of Transportation, Department of Defence and Freight Forwarders, to demonstrate the economies and time saving benefits which will result from shipment by air. It should be noted that one of the main economic benefits that will result from the movement of goods by air in this manner is the reduction of inventories which are required now due to the length of time required for shipment by other modes of transportation and consequent savings in warehouse space and costs of carrying inventories.

The rate of growth in the movement of commodities by air will depend upon the degree of aggressive marketing pursued by the air carriers. If the potential growth is achieved, provision will have to be made at airports to accommodate air cargo movements and the handling of air freight.

It should be noted that pure freighter aircraft movements contribute disproportionately to the noise problem associated with aircraft movements. This is due to the fact that the aircraft are

operating at a greater weight capacity in relation to maximum gross weight than air passenger aircraft. As a consequence, pure freighter aircraft are not as adaptable to noise abatement procedures as air passenger aircraft. Accordingly, the growth of air cargo will be encouraged if air cargo aircraft can operate from airports which are freed of noise considerations and curfews.

11. Technology

The Commission has dealt elsewhere in this report with new technological developments in relation to runway capacity, operational flight procedures, the jet engine, the means of forecasting the number of people affected by noise disturbance from aircraft operations and air cargo. The Commission now considers other technological developments not previously mentioned.

NEW AIRCRAFT

SUPERSONIC TRANSPORT

It has been previously mentioned that the flying of aircraft in such a manner as to create a sonic boom is banned by law in both the United States and Canada.

The only supersonic transports presently flying are the Concorde, a joint project of the British and French Governments, and the Russian TU-144. The Concorde has the capability of making a trans-Atlantic return flight in just over six hours. At present, the noise characteristics of this aircraft, flown at subsonic speeds, are comparable to the noise characteristics of a DC-8. It is powered by a straight jet engine with completely different turbo machinery features than other jet engines. At subsonic speed, it will not meet the requirements of FAR 36, and there is no known technology to enable it to meet the noise standards of FAR 36 in the 1974 - 1980 time frame. The Russian TU-144 has noise characteristics greater than a DC-8.

SUBSONIC CONVENTIONAL TAKE-OFF AIRCRAFT

Various derivatives of the DC-9 are proposed which will fly in the early 1980s. These will have air passenger capacity of 169 to 200 seats. Their noise characteristics will meet the standards of FAR 36. Various derivatives of the B-747, the DC-10 and the L-1011 are also planned. These will take the form of shortened and stretched aircraft. These aircraft will meet the standards of FAR 36.

SHORT TAKE-OFF AND LANDING AIRCRAFT

The Commission has expressed its view as to the role of short take-off and landing aircraft elsewhere in this report. However, the Commission again wishes to caution that considerable care must be exercised in the introduction of STOL aircraft in communities not previously exposed to aircraft noise, to ensure that the noise level of the aircraft is acceptable to the community.

VERTICAL TAKE-OFF AND LANDING AIRCRAFT

Vertical take-off and landing aircraft is represented by the helicopter.

Development is being conducted for a vehicle having the capacity of 46 passengers at a range of 285 miles at a speed of 173 miles per hour. It is anticipated that such a vehicle will be in operation prior to 1980. It should be noted that a helicopter generates more wake vortex per pound than conventional take-off and landing aircraft.

OTHER AIRCRAFT DEVELOPMENT

It has been suggested to the Commission that it is not unrealistic to assume aircraft will be flying before the year 2000 having a weight double the weight of the current B-747. One airport planner believes that the noise problem of the supersonic jet aircraft on, and adjacent to an airport, will be resolved.

Before the year 2000, it has been predicted that hypersonic aircraft will fly at a speed of 4,000 to 5,000 miles, or more, per hour.

Even rocket propelled aircraft can be expected. Such a development would permit a trip to Japan in two to three hours.

ELECTRONICS AND AVIONICS

Rapid technological advances are being made in electronics and avionics. These advance systems will enable aircraft to be controlled in critical flight conditions without increasing the work load of the crew. In addition, the capacity of computers will be increased which will improve the performance of existing tasks of the air traffic controller and make new tasks possible. A fully automated air traffic control system will be possible which will reduce delays and permit more direct flight routing.

Much of the present voice communication between the ground and the pilot will be replaced by the exchange of data between the ground computer and the aircraft computer. More precise navigation will result which will enhance terminal area manoeuvring capability. These improvements will enable the aircraft to have greater capability for curved approaches and departures procedures to reduce noise from aircraft operations.

NEW FORMS OF COMMUNICATIONS

The Commission heard evidence as to the replacement of the present mode of travel by a two way visual telecommunication system. Instead of travelling from one city to another to exchange information, a television conference studio is established in each of the respective cities. A person or group in Toronto wishing to meet a person or group in Montreal, instead of flying to Montreal, would attend a conference television studio in Toronto, and the person or persons with whom he or they were to meet in Montreal, would attend a television conference studio in Montreal. With the development of satellite telecommunications systems, the two way television conference system can be expanded. The benefits of such a system will reduce the direct cost associated with travel, that is the purchase price of a ticket, hotel accommodation, meals, taxis and other expenses directly attributable to the cost of travel, and the indirect expenses of travel such as loss of productive time during the duration of the trip. At present, the direct cost of travel is cheaper than the cost of a two way system of communication. It is

anticipated that increase in the acceptance of this new form of communication will result in a reduction of cost.

Of course, this form of communication will provide no substitute for the holiday traveller. It will provide some competition not only to air transportation travel but also to rail, automobile and bus transportation travel. However, the Commission is of the opinion that it will not have a significant impact on any of the existing modes of travel.

HIGH SPEED TRAINS

The Commission heard evidence as to the development of high speed trains, and in particular, a magnetic levitation system which is a non-contact suspension and non-contact propulsion system.

The magnetic levitation system takes two forms, the use of super-conducting magnets for high speed inter-city transportation of 300 miles per hour carrying 15,000 passengers per day, and the use of conventional electromagnets for lower speed intra-city transportation of 50 miles per hour with the capacity to carry 20,000 passengers per hour. It is estimated that the high speed system will not be available until 1990 due to the need for further technology and engineering and required time for construction. It is estimated that the low speed system will be available in 5 years. The Commission received no satisfactory evidence as to the cost of either system. Projections of the unit energy cost, more particularly discussed under the heading "Energy Crisis", indicate that the unit energy cost of a high speed magnetic levitation system will be 10 units for distances of 300 miles. Under the circumstances, it would appear that a magnetic levitation system will be the most inefficient mode of moving people from a standpoint of unit energy consumed in relation to the work done.

The Commission found a general consensus, in its discussions with officials of London, Paris and Berlin, that it would be ill-advised to base plans for the movement of people between cities on a magnetic levitation system as the required technology does not exist. There was also a general consensus that a steel-on-steel system is the best means of providing a high speed groundlink between cities, within the limits of foreseeable technology. It is within the capability and availability of equipment and reliability

of operation, and it would be most adaptable to replacement on evolution of current railway technology.

It was suggested in evidence before the Commission that high speed trains will provide substantial competition to conventional take-off and landing aircraft in the inter-city market. It should be noted that there was evidence before the Commission that only 25% of the passengers in the Toronto to Montreal market have a downtown Montreal destination. It should also be noted that present railway technology permits line-haul speeds in the range of 125 miles per hour. Line-haul speed refers to the maximum achievable speed on a straight run rather than the actual speed that will be achieved during the duration of the trip. While the Commission is of the opinion that, within foreseeable technology, any future development of high speed trains will provide line-haul speeds up to 200 miles per hour, this will probably result in greater competition to bus transportation, the automobile and any future inter-city STOL service than to conventional take-off and landing air transportation. Travel time will still be less by this mode and will provide a more convenient service to those persons not having a downtown destination.

12. Travel Habits

Since the advent of the jet-age in the early 1960's the travel habits of Canadians have changed drastically.

Particularly in the movement of families and persons on holidays to overseas and the Florida/Carribbean markets, the increase in the number of air passengers has been nothing short of phenomenal.

One of the principal factors for this tremendous change in the travel habits of the Canadians was the appearance of charter flights and the all-inclusive tours, operated by the scheduled airlines as well as the charter carriers.

The evidence of Maxwell Ward, the President of Wardair Canada Limited, indicated two significant factors regarding the travel habits of Canadians. The first was that notwithstanding the fact that fares for Advanced Booking Charters (ABC) had increased by 25% in 1974, there was no noticeable effect on the number of charter passengers carried.

The second significant fact stated by Mr. Ward was that in the year 1974 Wardair will process approximately 200,000 passengers through Malton, and that by the year 1980-81 this will probably increase to 1,000,000.

The projected increase by one air carrier operating from Toronto of five times the present number of passengers in the short span of 6 years indicates that the trend of the residents in the Toronto Metroplex to travel is far greater than in other areas of North America. This trend appears to be irreversible.

Notwithstanding the increase in the cost of fuel and the resultant fare increase, no one, with any real knowledge of the growth of travel by aircraft, was able to suggest that the travel habits of Canadians would diminish in the coming years.

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The evidence was that the younger population of Canada is more inclined to use aircraft as a means of travel than their parents. Approximately 60% of the population of Canada is under 30 years of age, from which it is reasonable to infer that the propensity to travel by air will continue to increase.

13. General Aviation

For the purposes of the Airport Inquiry Commission, general aviation was defined as including all flying activities conducted by flying training organizations, private business, recreational flying, and charter flying by commercial air carriers with aircraft generally under 12,500 pounds weight. For the most part, these aircraft operate under visual flight rules and use runways of a length of 3,500 feet or less. The definition does not include the larger air carrier aircraft, scheduled operations or commercial training activities, or private charter or corporate aircraft with large high performance turbo-prop or turbo-jet aircraft which operate for the most part under instrument flight rules. This latter class aircraft are required to operate from major airports due to a number of factors such as the length of runway they require, their high performance operating requirements which in turn require facilities presently only offered at a major airport, and for training under instrument flying rules.

General aviation aircraft movements are divided into two classes, local movements (movements by aircraft that originate and terminate at the same aerodrome and do not leave the airspace of the aerodrome) and itinerant movements (movements that originate at one aerodrome, leave the airspace of that aerodrome and terminate at another aerodrome).

It is easier to discourage movements by local aircraft at major airports, through specific measures, than it is to exclude itinerant movements. Policies designed to discourage local aircraft movements have resulted in a 50% decline in the number of annual local movements at Malton.

**FORECAST OF ANNUAL MOVEMENTS OF AIRCRAFT TO
THE YEAR 2000**

The Ministry of Transport, Canada, has made two forecasts of annual movements by general aviation aircraft to the year 2000. The latest forecast divided the movements into two categories, local movements and itinerant movements, and each category was subdivided into two classes, aircraft movements that require the facilities offered at a major airport and aircraft movements that do not require such facilities.

It is the itinerant traffic in which there has been a significant increase in the past which it is estimated will continue in the future insofar as major airports are concerned. It is predicted that the rate of growth in itinerant traffic movements will be slightly faster than local traffic movements. The estimated overall growth rate for the period 1971 to 2000 is 390% for itinerant traffic and 320% for local traffic. The annual percentage growth rate of general aviation aircraft movements in the Toronto area for the period 1970 to 1980 is estimated to be 6.4%. This slightly exceeds the annual percentage growth rate of movements for the same period for the whole of Canada but is less than the forecasted growth rate, for the same period, for Vancouver and certain selected cities in the United States.

The latest forecast of general aviation movements for the years 1980, 1990 and 2000 as well as the estimated annual movements for the year 1971, with 'L' being used to designate local movements, 'I' being used to designate itinerant movements and 'M' being used to represent the number within the local movements and itinerant movements, as the case may be, which will probably require the facilities of a major airport, are as follows:

<u>1971</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>
795,000-L	1,136,000-L	1,601,000-L	2,512,000-L
22,000-M	8,000-M	9,000-M	11,000-M
282,000-I	477,000-I	732,000-I	1,091,000-I
55,000-M	101,000-M	166,000-M	252,000-M

The total annual general aviation aircraft movements, including both local and itinerant movements and the number of such total movements which will probably require the facilities offered at a major airport for each of the above mentioned periods, are as follows:

	<u>1971</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>
Total movements	1,077,000	1,613,000	2,333,000	3,603,000
Total number of movements which require facilities of a major airport	77,000	109,000	175,000	263,000

Of the total general aviation movements which will probably operate from a major airport, it is not essential that all such movements be handled at a major airport. The number of general aviation aircraft movements which must be handled at a major airport for each of the aforesaid periods is as follows:

<u>1971</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>
10,000	21,000	48,000	63,000

Within the general aviation aircraft movements which do not require the facilities of a major airport, some movements require tower facilities while others do not. However, the overwhelming majority of such movements do require tower facilities.

**THE PROBLEM OF MIXING GENERAL AVIATION
AIRCRAFT AND SCHEDULED COMMERCIAL
AIRCRAFT AT MAJOR AIRPORTS**

The mixing of heavy air carrier aircraft and light general aviation aircraft with widely divergent performance characteristics can lead to conflict for air traffic control at or in the vicinity of the airspace of a major airport due to the greater separation standards required between light aircraft and heavier aircraft. In addition, runway capacity is reduced on arrival and departure due to the greater separation standards required between a light general

aviation aircraft landing after or departing after a heavier aircraft, having regard to wake turbulence considerations. In order to avoid some of these problems, most general aviation aircraft movements are prohibited during the scheduled peak hours.

As the growth in general aviation aircraft movements at major airports increases, conflicts and congestion will also increase.

THE IMPORTANCE OF GENERAL AVIATION

90% of all aircraft movements in the Toronto area are by general aviation aircraft. General aviation aircraft accounts for 20% of all the aircraft movements at Malton.

It is estimated that the contribution of general aviation to the gross provincial product of the Province of Ontario in the year 1980 will be \$800 million. This contribution will increase beyond 1980 proportionately to the increase in growth of general aviation movements in subsequent years.

General aviation aircraft constitutes 98% of the Canadian civil aviation fleet. Aircraft having a gross weight under 12,500 pounds represents 96% of the general aviation fleet. During the period 1963 to 1973, the number of general aviation aircraft increased from 6,000 to 14,000 aircraft. It is estimated that by the year 1980 there will be 18,000 general aviation aircraft.

General aviation aircraft provide air transportation services to many communities which would not otherwise have any air transportation service. General aviation is used extensively by business and industry, by private individuals for personal transportation and for recreational purposes as well. It is to general aviation that airlines must look for future flight crews.

THE PRESENT STATE OF GENERAL AVIATION IN THE TORONTO AREA

As noted previously, local general aviation movements have been discouraged at Malton. This policy is to continue into the future as indicated by the substantial reduction in the number of general aviation aircraft movements at Malton forecasted for the period 1971 to the year 2000. It has been mentioned that most itinerant general aviation aircraft movements are prohibited at Malton during scheduled peak hours. The testimony of witnesses

engaged or interested in general aviation, who appeared before the Commission, indicated that on the whole general aviation would prefer not to fly into or from Malton but certain circumstances dictate that Malton be used. Malton is the only airport in the Toronto area which provides instrument landing system facilities. Malton is the only airport in the area which provides continuous Canada Customs and Immigration services on a 24-hour basis. Malton is the only airport where an office is maintained for instrument flight inspectors, as result, all instrument rated pilots must take their semi-annual and annual test flights to and from Malton.

The Toronto area has no Class II or medium sized airport for the handling of general aviation aircraft of average twin-engine type with required runway length and supporting facilities to permit all weather flying.

No two general aviation airports in the Toronto area are operated by the same authority, as a consequence, there is little co-ordination between them. The future of many of the general aviation airports in the Toronto area is in doubt.

The present general aviation airports in the Toronto area are the Toronto Island Airport, the King Airport, the Maple Airport, the Buttonville Airport and the Markham Airport. There is an airport located at Downsview, Ontario, but its use is restricted to military purposes with the exception of permitted use by deHavilland.

The Toronto Island Airport suffers from both a lack of instrument landing facilities and a convenient mode of ground access. It has not received much financial support for the improvement of its facilities. There are approximately 170,000 to 200,000 annual movements at this airport. It is used for business, training, travel and recreational purposes.

The King Airport is primarily used as a helicopter airport and consideration is being given to closing it to fixed-wing aircraft.

The Maple Airport is privately owned and operated. However, it is operated on leased land. It is presently used for recreational purposes, although, some training does take place.

Buttonville Airport is used for training, recreation, travel and some business purposes. It is presently at capacity, however there are plans for future expansion. In order to enable the plans for

expansion to be implemented, there must be a change in certain surrounding land use. This has encountered local opposition.

The Markham Airport is privately owned and operated. There are approximately 30,000 annual movements at this airport. It is used for light aircraft and some training. If the proposed Pickering Airport is opened, it is planned that the Markham Airport will be closed.

It should be noted that there is no general aviation airport to serve the western limits of the Toronto Metroplex.

There is some discussion that the Toronto Island Airport will be closed. If this does occur, the existing general aviation airports in the area cannot accommodate present movements of that airport. If the Toronto Island Airport is developed as a STOLport and reaches a substantial rate of activity, the Ministry of Transport, Canada, predicts that general aviation will have to move from the Island Airport as general aviation operations will not be compatible with a STOL operation. In such an event, the question arises as to where the present general aviation movements at the Island Airport will be accommodated. It may be more economically beneficial to the owners of private airports to put their land to another use. The need to expand general aviation airports is being met by opposition similar to that encountered in the extension of major airports.

It has come to the attention of the Commission that the plight of the young person who wishes to take the required training for a career as a commercial pilot is most difficult. At some of the existing flying schools, there is a shortage of trained instructors or a shortage of aircraft or both. There is no institution serving the central Ontario area where a student can take a concentrated programme to obtain his commercial pilot's licence. There is a good deal of inter-dependence among the respective roles of the flight crew, air traffic controller, ground crew and even the flight attendants or cabin crew. It would appear desirable that an institution be established in the central Ontario area for those persons seeking careers in the air transportation system. Such an institution should be staffed by personnel that have been engaged in the daily problems of the air transportation system. Such an institution would not only provide better training opportunities for students in their chosen career but also would make them more aware of the role played by all persons engaged in the air transportation system.

The air transportation system would benefit from such an institution as well as the student.

DISTURBANCE FROM NOISE OF GENERAL AVIATION OPERATIONS

There was evidence at the Malton Hearing by a community group that it was experiencing disturbance from aircraft operations from business jets.

The number of business jets estimated to be operating in the year 1980 is about double the present number of such aircraft, and it is predicted that there will be a 500% increase in the number of such aircraft operating in 1985 over the present number. More than 80% of the present business jet fleet do not meet the noise standards of FAR 36. There should be no problem in respect to newly produced aircraft of older model types as they generally exceed a weight of 12,500 pounds and would be subject to the noise standards of FAR 36, as such aircraft are generally manufactured in the United States. However, a retrofit programme would be required to reduce the noise levels of the present general aviation jet fleet for it to meet the standards of FAR 36.

The United States is addressing itself to the noise problem associated with the operation of propeller driven small airplanes. On 9 October, 1973, the FAA issued Notice of Proposed Rule Making 73-26, which would limit the noise level of newly designed propeller driven small airplanes as a requirement for the issuance of a type certificate.

COMMENT

There are a number of matters which appear to the Commission to merit further consideration.

In order to properly serve the air transportation needs of the central Ontario market, the air transportation needs of the central Ontario market should be considered as a whole. A major airport or airports, must be considered with general aviation airports as forming part of an air transportation system to serve the central Ontario market.

It appears to the Commission that any such system should include three classes of airports. A Class I or major airport such as

Malton and the proposed Pickering Airport would have runways and sophisticated air traffic control equipment facilities. A Class II or medium size airport would have all facilities required for general aviation aircraft of that type, the average twin-engine business aircraft. Such an airport should have runways of 4,000 to 4,500 feet in length. An air traffic control tower would be provided at such an airport together with all air traffic control equipment and ground facilities necessary to permit aircraft of that size to fly in all weather conditions and at night. In addition, personnel would be located at the site for necessary inspection, and custom and immigration services would be provided on a 24-hour basis. A Class III or small utility airport would be provided for light aircraft. Runways suitable to the needs of such aircraft would be provided together with necessary support facilities. Such an airport would not require an air traffic control tower but would require immigration and custom on a 24-hour basis.

It should be expected that these airports would not be operated at a loss. Landing fees and other service charges should be commensurate with the service provided.

It appears to the Commission that the Government of Canada should address itself to the question of establishing noise certification standards for propeller driven aircraft. By keeping aircraft noise within the boundaries of the airport, accommodation will be reached between the general aviation airport and its neighbours which is so vital to a healthy transportation system.

The establishment of a three class airport system in itself will not be sufficient for a vigorous expanding air transportation system to serve the central Ontario market. The operations and activities at each airport must be co-ordinated by a single authority if the most efficient traffic flow, economical and maximum use of such facilities is to be achieved and future congestion and conflicts avoided.

14. Short Take-Off and Landing Aircraft (STOL)

The Commission heard evidence as to a particular class of aircraft being developed to serve the short-haul market. Included in this class of aircraft are aircraft having reduced take-off and landing capability (RTOL), vertical take-off and landing aircraft (VTOL), quiet take-off and landing capabilities (QTOL) and short take-off and landing capabilities (STOL).

The RTOL aircraft is a fixed-wing aircraft development and involves a lift through engine thrust deflection and vertically-operating direct lift engines such as fan-and-wing or fan-and-fuselage.

The VTOL is a rotary aircraft and derives its vertical lift capability from rotors or tilting propellers regardless of the means for developing forward propulsion.

The QTOL aircraft will be powered by high by-pass turbo fanned engines and will have ability to land and take-off from a 4,000 foot runway.

The STOL aircraft is based upon a powered lift principal enabling the aircraft to operate from a 2,000 foot runway with steep approach capabilities.

Not all these concepts will become operational, nor will there be a need for all of them. Performance, economic considerations, passenger acceptability, social acceptability and technological developments are some of the factors which will govern which concepts become operational.

STOL AIRCRAFT

Three of the main aircraft under development with short take-off and landing capabilities are the deHavilland DHC-7, the WFW Fokker BSW-614, and the Hawker Siddeley HS-146.

The DHC-7 will have the capability of operating from a runway 2,000 feet in length. It will be capable of making a 6 degree approach. The planned passenger capacity is 49.

Planning and development are also taking place in respect to a Quiet Short-Haul aircraft known as QSH. This plane is being designed to operate from runways of 4,000 feet at a distance of under 1,000 miles and with a seating capacity of 100 to 150 passengers. This aircraft is regarded as being a second generation class of STOL aircraft, although a strict interpretation of a STOL aircraft is an aircraft that has the capability of operating from a runway 2,000 feet in length. It is planned to introduce this craft in the early 1980's.

THE STOL MARKET

Various predictions have been made in respect to the role of a STOL operation in the air transportation system. It is predicted that the STOL market will consist of passengers diverted from conventional take-off and landing aircraft, from rail transportation, from bus transportation and from the private automobile. In addition, it is estimated that it will attract passengers in its own right. The basis for predicting that a STOL operation will attract passengers from various modes of ground transportation is the comparatively short trip time offered by STOL to the same destination points as ground vehicles. The underlying premise in the assumption that STOL operation will divert passengers from conventional take-off and landing aircraft is that a STOL operation will, on a total trip time basis, provide a faster service than conventional aircraft in that it will operate from one downtown airport to another downtown airport unlike conventional aircraft that operate from airports 15 or more miles away from a city centre.

It is also suggested that a STOL operation is an alternative to providing costly ground transportation to outlying communities. In addition, it would provide communication with remote areas where alternative modes of transportation are not feasible. It is also

suggested that a STOL operation would complement an existing conventional aircraft operation in that it is a means of providing an economic operation in the non-peak hours. With passengers having an alternative through a STOL operation to fly at other times during the day, there would be some levelling out of peak hour demand periods.

CONSTRAINTS TO A STOL OPERATION

There are a number of constraints to a STOL operation such as the capacity of a STOL vehicle, the capital investment to establish STOLports, market demand and operational costs.

Operational tests of the DHC-7 prototype, a 49 passenger aircraft, are planned for the fall of 1974. Until the DHC-7 is ready for service, it is planned that service will be provided by the DHC-6 aircraft which has a passenger capacity of 11. Once the DHC-7 is in operation, it will be used in association with the DHC-6 to form a secondary air transportation service.

There are few airports, other than existing major airports, that have suitable existing facilities for a STOL operation. Capital investment will be required to make those airports adaptable for a STOL operation. This will involve expenditure for terminal buildings and other necessary buildings, air traffic control equipment, approach and ground aid equipment, ground maintenance and emergency equipment and other support service equipment. In addition, car parks will have to be established which will probably involve land acquisition costs as well as the cost of construction of a multi-level building. If there are no existing airports in the regions to be served, or if an existing airport is not adaptable to a STOL operation, capital costs will have to be incurred for land acquisition, runway construction and possibly for ground access to the STOLport.

It is estimated that in a distance up to 100 miles a STOL operation will capture 1% of the market and 4% to 5% of the market travelling a distance of 120 to 240 miles and just under 2% of the market travelling a distance of 200 to 360 miles. For distances up to 300 miles, STOL will be competing for passengers with rail, bus and private automobile. It will be a question of individual preference as to whether a traveller will abandon the convenience afforded to him by his own automobile, in so far as

flexibility in the time to start and return from his trip as well as having his automobile at his disposal at his place of destination. This in part will be influenced by the schedules offered by a STOL operation, the place of destination of the STOL operation as compared to the desired destination of the traveller, the overall trip time and comfort. Most of these factors will influence the traveller's choice as to the alternatives offered by bus and rail.

The Commission notes that the forecast of the Ministry of Transport, Canada, in relation to the penetration of the short-haul market is somewhat higher than the above mentioned figures.

It is estimated that by 1982 a STOL operation will divert 3.2% of the short-haul passengers from conventional short-haul aircraft market and will divert 4.2% of the short-haul conventional aircraft passengers by 1990. One of the underlying assumptions in this forecast is that the total trip time offered by a STOL operation will be shorter than that offered by a conventional aircraft operation. This will depend upon whether the traveller in fact considers an air trip as a single period of time from the time he leaves his home until the time he reaches his ultimate destination or whether he regards the trip as being composed of separate time segments, the time from his home to the airport, the actual flight time, and the time from the airport of landing to his destination, and is influenced in making his choice by the time factor involved in each segment. While the total trip time will be shorter by STOL, the actual air time will be shorter by conventional aircraft. It should be noted that Air Canada testified that in its experience only 25% of the passengers travelling between Toronto and Montreal have a downtown destination.

A STOL operation offers no economies in operation from that of a conventional aircraft operation over 200 miles. While the unit energy cost, based upon a system energy cost, more fully discussed under the heading 'Energy Crisis', is the same for a STOL aircraft and that of a conventional aircraft up to 200 miles, there is a considerable penalty in so far as a STOL aircraft is concerned at distances over 200 miles. The estimated unit energy cost of a STOL aircraft flying between Toronto and Montreal is 5 while the estimated energy cost for a DC-9 flying the same distance is 3.5.

The number of STOL airports that can be established will be limited to the extent that there is a population to support a STOL

operation, unless the Government proposes to subsidize the operation. In addition to the initial capital investment, there will be continued operating expenses for skilled personnel to service the aircraft and for air traffic control as well as other personnel.

The general consensus in the United States, Canada, Britain and France and witnesses on behalf of the Ministry of Transport, Canada, is that STOL will make an insignificant contribution to meeting the great demands facing the air transportation system by the forecasted growth of passengers between major cities already served by conventional aircraft. There is also a general consensus that STOL has an important part to play in the air transportation system, that is, providing support or feeder service between major airports and regions where traffic cannot support a major airport, and bringing fast and convenient transportation to remote areas.

A STOLPORT FOR TORONTO

It was suggested that the Toronto Island Airport is appropriate for the introduction of a STOL operation in the Toronto area.

The existing runways at the Toronto Island Airport would be sufficient for STOL operation. In addition, there are hangars and certain other facilities available. However, capital expenditures would be required for air traffic control equipment, approach and ground aid equipment, ground maintenance and emergency equipment, terminal buildings and other required buildings. Equipment would also have to be purchased for support services. Land would have to be acquired for a car park and a multi-level building would have to be constructed. It is estimated, in 1973 dollars, that the initial capital expenditure would total \$14,500,000. Further capital expenditure would be required as the STOL operation expands.

The stack of the Hearn Generating Station, near the Toronto Island Airport, is an approach obstacle which precludes the use of a conventional instrument landing system; so a microwave landing system with a 6 degree approach is required. This is too steep an approach for most general aviation aircraft now using the airport. This factor together with safety requirements and passenger acceptance of a STOL operation would make a STOL operation and a general aviation operation incompatible for the Toronto Island Airport. Accordingly, the present general aviation operations would have to locate elsewhere.

There would be some conflict, from an air traffic control point of view, from operations on the 08 runway at the Island Airport with the 05/23 runway at Malton Airport as these runways would be operated under similar weather conditions. If a high level of activity is developed for a STOL operation at the Island Airport it could compromise the preferential runway system presently employed at Malton.

One of the major constraints to the development of a high level STOL activity at the Toronto Island Airport is the lack of good access between the Island and the mainland. At present, access is provided by means of watercraft. To overcome this deterrent to acceptance of a STOL service, it will be necessary to construct a bridge to link the Island and the mainland.

STOL AND NOISE DISTURBANCE

A number of community noise studies have been conducted in the United States which showed the same general trend; relatively low noise levels in the early hours of the morning increasing quite rapidly during the morning rush hours and then a levelling out until the back home rush hours and then a rapid falling during the late night period. The average A-weighted decibel sound level rarely exceeded 65 dB(A), and at night it fell as low as 35 dB(A). Current research has shown that there will be an appreciable disruption of contextual speech as aircraft flyovers exceed 75 dB(A) which is approximately equivalent to 88 PNdB.

The currently discussed noise level of a STOL aircraft at 500 feet is 95 PNdB which is roughly equivalent to 82 dB(A) at 500 feet. It is assumed that the noise level from a STOL aircraft will reduce at the rate of about 8 dB(A) per doubling of distance. Accordingly, STOL flyovers at altitudes which are greater than 2,000 feet will probably not intrude in most areas during the daytime but will exceed the average levels at night. Altitudes greater than 5,000 feet would be necessary to make STOL flyovers equivalent to median noise levels at night.

The noise levels from a STOL operation at an existing major airport will be enveloped in the noise levels of other aircraft flying into and from that airport, unless the STOL aircraft has some types of noise to which the community is not presently exposed. However, major en route noise problems may develop particularly when

Short Take-Off and Landing Aircraft (STOL)

flying over areas with low ambient noise levels, or areas which previously had no or very limited exposure to aircraft noise of any kind. This will be especially so if the aircraft fly at low speed and at low cruising altitude.

The establishment of a STOL operation in areas other than major airport areas will expose the surrounding population to a noise not previously experienced to a significant degree. Strong adverse reactions should be expected if the resulting maximum noise levels or characteristics of the noise or the total noise exposure is in excess of that which the population regards as acceptable or at least tolerable. The degree of acceptance will vary depending upon the ambient noise levels in the area where the STOL airport is located. The level of acceptability will be much lower if the airport operates out of, or very near, a residential area than operations near an industrial or commercial area where the ambient noise level will be considerably higher than a residential area. If care is taken to establish acceptable noise levels for people living at the STOL airport boundary, the noise levels should decrease at locations removed from the airport boundary. This can only be done in part by the establishment of maximum noise levels for STOL operations at the airport boundary.

The FAA in the United States is addressing itself to this problem. It issued Advance Notice of Proposed Rule Making, 73-32, on December 28, 1973, in respect to noise standards for short-haul aircraft. As STOL aircraft will not just be operating from major airports, the current thinking of the FAA is that noise standards for a STOL aircraft to meet at the airport boundary will not be sufficient but that the standards must be related to the total STOL system. This will require a study of not only the actual noise generated by the aircraft, but the types of airports into which it will be flying as well as its en route flight profile. The main concern of the FAA is that unless serious consideration is given to the noise problems which will be generated by a STOL system, the benefits to be offered by a STOL operation will be jeopardized by adverse community reaction.

COMMENT

While STOL will not have much impact in solving the problem confronting the air transportation system by the forecasted growth in passengers, it does have an important role to play in the air transportation system. STOL can provide a support or feeder service to major airports from areas which cannot support a major airport and can provide a good communication service for remote areas. In planning for a STOL system, care must be exercised to ensure an accommodation between STOL and its airport neighbours and its en route neighbours through the establishment of standards of acceptable levels of noise based upon a total STOL system rather than based upon the noise characteristics of the STOL aircraft.

DeHavilland Aircraft of Canada, Limited has established a good reputation for Canada as a manufacturer of small aircraft, such as the Twin Otter, single Otter, Beaver, Caribou and Buffalo. It is a world leader in this market. The Government of Canada has recently purchased deHavilland Aircraft of Canada, Limited. This will not only ensure that our talented aircraft builders will continue to maintain Canada's reputation as a builder of small aircraft, but they will be able to increase that esteem with the production of the DHC-7 and the subsequent production of the QSH.

15. The Two-Airport System

If a decision is made to proceed with the proposed Pickering Airport, the Toronto Metroplex will have a two-airport system. This will not make the Toronto Metroplex unique. Many of the great metropolitan centres of the world have more than one airport. New York has three airports, La Guardia Airport, John F. Kennedy International Airport and the Newark Airport. Washington has three airports, Washington National Airport, Dulles International Airport and the Baltimore-Washington International Airport. Chicago has two airports, O'Hare Field and Midway Airport. London has three airports, Heathrow, Gatwick and Stansted. For many years, Paris has been serviced by two airports, Le Bourget Airport and Orly Airport. Le Bourget Airport is gradually being phased out as a commercial carrier airport, being replaced by the newly opened Charles DeGaulle Airport. For many years, Berlin has had two airports, Tempelhof and Tegel. Although consideration is being given at present to closing the Tempelhof Airport once the new Tegel Airport is open, there is opinion that even if Tempelhof is closed, it will only be a relatively temporary closing due to the fact that projected future growth will require that it eventually be re-opened.

There appears to be a general consensus among airport operators and planners that most large metropolitan centres in the future will be served by two and even three or four airports.

Where two airports have already been established to serve a large metropolitan area, a particular role has generally been assigned to each airport. International and long-haul flights to and from the New York and Washington areas operate basically from one airport. In the Paris Airport system, it is planned that long-haul international flights will operate from Charles DeGaulle Airport

and that domestic and short-haul international flights will operate from Orly Airport. In Berlin, long-haul international flights operate from Tegel Airport and domestic and short-haul international flights operate from Tempelhof Airport. However, in the London area, long-haul international traffic operates from all three airports, and domestic and short-haul international traffic operate from two of the three airports.

In 1971, the British Government announced that it would build another airport at Maplin to serve the London area. Once the new airport was established, the Stansted Airport would be phased out and the Heathrow and Gatwick Airports would be held at or below their 1980 levels of aircraft movements.

In 1965, the British Government made a decision that in order to meet the air transportation needs of the London area, another airport would have to be established or existing airports would have to be expanded. The Standsted Airport seemed to be the most appropriate airport to expand due to its proximity to London; so it was decided that the Standsted Airport would be expanded. The decision to expand the Standsted Airport was followed by an outcry of protest from some segments of the population residing in the area. This led to the appointment of a Royal Commission to inquire into the question of an appropriate site for a new third international airport to serve the air transportation needs of the London market. Following the report of the Royal Commission, the Government in 1971 chose Maplin as the appropriate site for another airport to serve the London area.

To implement the decision, a considerable sum of money would have to be expended. In order to establish an airport at Maplin, land would have to be reclaimed from the sea, a new community would have to be established in close proximity to Maplin to house the people who would be working at Maplin and an expensive programme of highway and rail transportation would have to be undertaken in order to provide access between London and the airport which are 50 miles distant from each other. At the same time, the British Government was incurring substantial expenditure in the development, jointly with France, of the Concorde. It was estimated that substantial additional funds would have to be invested by both Governments for continued research and development of the Concorde.

The number of passengers using the London airport system has fallen in 1974 from that of 1973. This is attributed to the three day work week that was in force in the earlier part of the year. However, as the year progressed, the rate of decrease has diminished. Even though it is anticipated that 1974 will not be a good year for air travel, the British Airports Authority predicts that air travel will increase in Britain at the rate of 11% per annum.

During 1974, Britain is undergoing its most serious economic crisis since the end of the war. In addition, there have been demands from the public for the British Government to re-negotiate its terms of membership in the European Common Market. During the course of discussions between the Prime Minister of the United Kingdom and the President of France, in July, the British Government made an announcement that it would contribute substantial additional sums of money toward the development of the Concorde and that the Maplin Airport project was being abandoned. In abandoning the Maplin project, the Government stated that it did not feel that the forecasted growth of passengers would be reached and that new technology would reduce disturbance from aircraft operations at existing airports.

In its annual report, 1972/73, the British Airports Authority, which is charged with responsibility for the operation of the London airports, set out various consequences in the event that the Maplin project was abandoned. In respect to Heathrow, the report stated that further land would have to be acquired immediately for terminal space, including the removal of a large sewage works. The motorways and underground subway lines would have to be supplemented by a surface rail link. Even with this development, Heathrow would be at capacity by the mid-80's. In so far as Gatwick is concerned, it would be at capacity in the mid-80's and additional land would have to be acquired for runway and terminal facilities. It is estimated that 1,500 to 2,500 acres of land would have to be acquired for required facilities at Stansted once Gatwick and Heathrow Airports have reached capacity.

Shortly after the announcement of the British Government that the Maplin project was being abandoned, a letter was published in the London Times from the Chairman of the County Council in which the Stansted Airport is located. In his letter, he stated that the population in the area would not tolerate any

expansion of Standsted nor any increase in air movements or noise levels.

It was suggested in the evidence before the Commission that a second major airport was not required for the central Ontario market as the forecasted growth in passengers and traffic could be met by expanding regional airports. There was testimony before the Commission by Air Canada and Wardair Canada Limited that these companies operated charter flights from the London Ontario Airport and the Windsor Airport, respectively. Air Canada's charter flights from the London Airport are basically weekly in the winter time to service the inclusive tour charter field. The charter flights of Wardair Canada Limited from the Windsor Airport basically serve the Detroit, Michigan market. It should be noted that these flights originate from the southwestern Ontario region.

In order to conduct commercial carrier operations at a regional airport, substantial capital expenditure would be required for adequate runways, air traffic control and navigational facilities. In addition, there would be substantial operating expenses for personnel such as air traffic control, specialized aircraft mechanics as well as other personnel. The market does not exist in most regions to warrant these expenditures. As has been previously mentioned, under the topic "Forecasts", 90% of the present enplaned/deplaned passengers at Malton originate and terminate from the Toronto Metroplex and that in the year 2000 it is forecasted that 80% of the enplaned/deplaned passengers will be from the Toronto Metroplex.

In the opinion of the Commission, the expansion of regional airports to provide services, similar to airport services provided at major international airports, would be an unwarranted uneconomic duplication. It would not be a solution to the problem facing the air transportation system by the forecasted growth in the central Ontario market. The Commission is of the view that regional airports have an important role in the supply of passengers to major airports. This role should be encouraged and expanded. Such a policy would provide good air transportation services for regions that cannot support major airports and would contribute to a strong economic air transportation system.

There have been difficulties in operating a two-airport system. The Commission has mentioned some of these difficulties under the

heading "The Role of the Proposed Pickering Airport". The basic difficulty in the operation of a two-airport system has been caused by the opposition and lack of cooperation on the part of the air carriers. Air carriers are reluctant to incur the expense of a duplication of service and especially the economic penalty that results in the initial years following the opening of a second airport.

However, a question arises as to the real extent of the economic penalty which the airlines incur. If it were possible to meet the forecasted growth of traffic at an existing airport, the boundaries of the airport would have to be expanded. New terminals would have to be built. Some airlines would inevitably be required to incur the expense of moving from an existing terminal to a new terminal and all the expense which such a move entails, or incur the expense of acquiring additional space, and all the expense entailed by expanding their operations into areas formerly occupied by other airlines that have moved to the new terminal. In addition to the added expense for increased space and leasehold improvements for the new space, additional expenditures would have to be incurred by an airline for all other necessary equipment and personnel associated with an expansion of operations. Air Canada admitted that if it were possible to expand Malton to meet the forecasted increase in passengers, it would have to incur substantial capital expense for expanded operations. It estimated that the capital cost of such required facilities would be about \$17 Million.

Although Chicago has a two-airport system, it has for a number of years basically been a one-airport system. Most airlines have moved their operation from Midway Airport to O'Hare Field in order to minimize cost and to maintain their competitive position with other airlines operating from O'Hare Field. This development took place because the landing rights granted to airlines only specified Chicago and not a particular Chicago Airport. However, the Federal Aviation Administration of the United States is of the opinion that Midway will have to be re-activated if the Chicago Airport system is to meet the forecasted growth in the air transportation system for the area.

Mr. Thomas Sullivan, an internationally renowned Airport Planner with 30 years experience in the air transportation industry, and Mr. Paul Shaver, Director of Airport Planning for the Department of Transportation, City of Chicago, testified before the

Commission that there is no difficulty in operating a multi-airport system provided that each airport operates independently of the other as much as possible and so long as each airport is operated to meet the demands of the market.

It appears to the Commission that most of the major metropolitan areas of the world will have a multi-airport system. There should be no difficulty in operating a multi-airport system provided there is a careful assignment of flight sectors to each of the airports comprising the system, and a first class highway link is established between the airports. In assigning flight sectors to the respective airports, care must be taken to eliminate, as much as possible, the necessity for a passenger to travel between the two airports in order to make an interconnecting flight. Even with the greatest of care, economics will require some passengers to land at one airport in the system and to travel to the other airport in order to make a connecting flight. A first class highway facility between the two airports must be established to make possible the journey between the two airports in a reasonable length of time. The primary concern in the operation of a multi-airport system should be the need to meet the demands of the airport user rather than the demands of the air carriers. To ensure that these requirements are met, it appears to the Commission that an Airport Authority should be established entrusted with responsibility for seeing that the two airports operate in a proper manner to meet the demands of the public.

It is the Commission's view that in the past airports have tended to be operated for the convenience of the air carriers and not the travelling public. The Commission is also of the view that this trend has come to an end. There is no reason why airports should not be economically self-supporting and operated for passenger comfort.

16. The Role of the Proposed Pickering Airport

The Commission heard evidence as to various roles that the proposed Pickering Airport could play in the central Ontario transportation system. After consideration of all the evidence, the Commission is of the opinion that the proper role for Pickering, to the year 2000, is for it to handle all international flights, (with the exception of flights to the United States, hereinafter called trans-border flights,) charter flights and pure freighter flights. In addition, provision will have to be made for some interconnecting domestic and trans-border short-haul flights.

The Commission is of the view that Malton and Pickering should operate independently of each other as much as is reasonably possible in order to avoid such situations as where a passenger lands at Pickering and then must make an interconnecting flight at Malton, or a passenger leaves Malton in the morning, where he has parked his car, and then returns to Pickering in the evening.

The Commission heard evidence that in the inclusive tour charter field, that is the buying of an airplane ticket, ground transportation and hotel accommodation, 25% to 30% of the passengers originate from points other than Toronto and Hamilton. The Commission also heard evidence that in respect to advance booking charter flights approximately 15% originate outside the Toronto-Hamilton market. Under the circumstances, domestic flights should be provided for these people at Pickering wherever it is reasonably economically feasible to do so.

Evidence was also adduced before the Commission that a substantial number of American residents, in the border states, prefer to fly to Malton for trans-Atlantic flights and Caribbean

flights in order to avoid delays which are experienced at airports in the United States, and also due to the fact that various economies are offered in Canada which are not available in the United States, such as lower airfare through advanced booking charter plan and special youth fares. In order to maintain this advantage, some interconnecting trans-border flights will be required at Pickering.

The Commission is also of the opinion that facilities for a STOL operation should be provided at Pickering. The STOL operation could provide a feeder service between Pickering and other regions of Ontario wherever it is economically feasible to establish a STOL operation.

This suggested role for Pickering Airport will provide some relief from disturbance caused by flight operations at Malton. The noisiest aircraft presently operating at Malton, the DC-8 and the 707, which are used in the international sector, will fly from the proposed Pickering Airport.

With the assignment of this role to the proposed Pickering Airport, Malton will be used for domestic and trans-border operations. The passenger trips in these segments will be basically of a business nature. Therefore, it is desirable that trans-border operations and domestic flights be confined to Malton which is nearer the business markets of Metropolitan Toronto than the proposed Pickering Airport.

In order to establish the proposed Pickering Airport as an international airport, it appears that existing bilateral agreements will have to be amended to specifically name the proposed Pickering Airport as the Toronto point on the route of the designated airline or airlines of a foreign country. The evidence did not indicate that the Ministry of Transport, Canada, appreciates the seriousness of this problem. The Commission heard evidence that in the Chicago area, for example, which is served by two airports, only one airport is used due to the fact that the flight routes merely designate "Chicago" as a point and do not designate a specific airport in Chicago. The Commission also learned of other difficulties which may be encountered in assigning air carriers to a specified airport. In one case where a large metropolitan area is served by two airports, the government of that country sought to reduce air movements at one of the airports by restricting any new carriers to the other airport. The government of a foreign carrier

which wished to have landing rights at the restricted airport took the position that if its carrier was not permitted to operate at the restricted airport, it would not allow the air carriers of the restricting nation to land at certain of its airports. As a consequence, the foreign air carrier was permitted to land at the restricted airport.

Difficulties can be encountered in assigning airlines or air traffic to a particular airport in a two major airport system, even where care has been exercised to prevent problems from arising, if any facet is overlooked. The Commission heard evidence that at the new Dallas/Fort Worth Airport an agreement was made between the Airport Board and the air carriers then flying into Love Field that on a date to be named by the Airport Board all carriers would move their operations to the new Dallas/Fort Worth Airport. Subsequent to this agreement, the United States Civil Aeronautics Board granted licences to new air carriers to land at Love Field. On the date designated by the Airport Board to relocate operations to the new Dallas/Fort Worth Airport from Love Field, all the air carriers who were party to the agreement to relocate moved their operations to the new airport. However, those air carriers who had been granted landing rights subsequent to the agreement, and who were not party to the agreement, refused to relocate their operations. With Love Field being closer to downtown Dallas than the Dallas/Fort Worth Airport, the new carriers had an advantage over the other carriers who had relocated at the new airport. In order to maintain their competitive position, some of the air carriers who had agreed to move their operations to the new airport have re-established part of their operations at Love Field. As a consequence, litigation has ensued between the Airport Board and the various carriers. As a further consequence, the new Dallas/Fort Worth Airport is not operating at the degree of activity anticipated.

If a decision is made to proceed with Pickering, any new bilateral agreements which grant routes to foreign carriers to Toronto should specifically designate Pickering, when it comes into operation, as the point on the Toronto route.

Amendments will have to be made to the licenses of Canadian carriers engaged in the international sector to restrict their international operations in the Toronto Metroplex to Pickering.

It is the Commission's understanding that air carriers operating at Malton, engaged in the international sector, lease space at Malton from the Ministry of Transport, but it is the responsibility of the individual carrier to effect its own leasehold improvements. Compensation will have to be paid to the air carriers for the undepreciated value of their leasehold improvements.

There may be an economic penalty to Canadian carriers who must provide duplicate services at both Malton and Pickering. Air Canada estimates that its start up cost to operate from Pickering will be between \$33 million and \$35 million. In addition, Air Canada estimates that the operating cost for operations at Pickering will initially be \$7 million a year. However, Air Canada also anticipates that as activity increases at Pickering, the added operating costs will gradually diminish and eventually vanish due to the fact that additional operating costs by way of staff, equipment, leased space and leasehold improvements would have to be provided at Malton to meet future needs as growth develops if there was no Pickering.

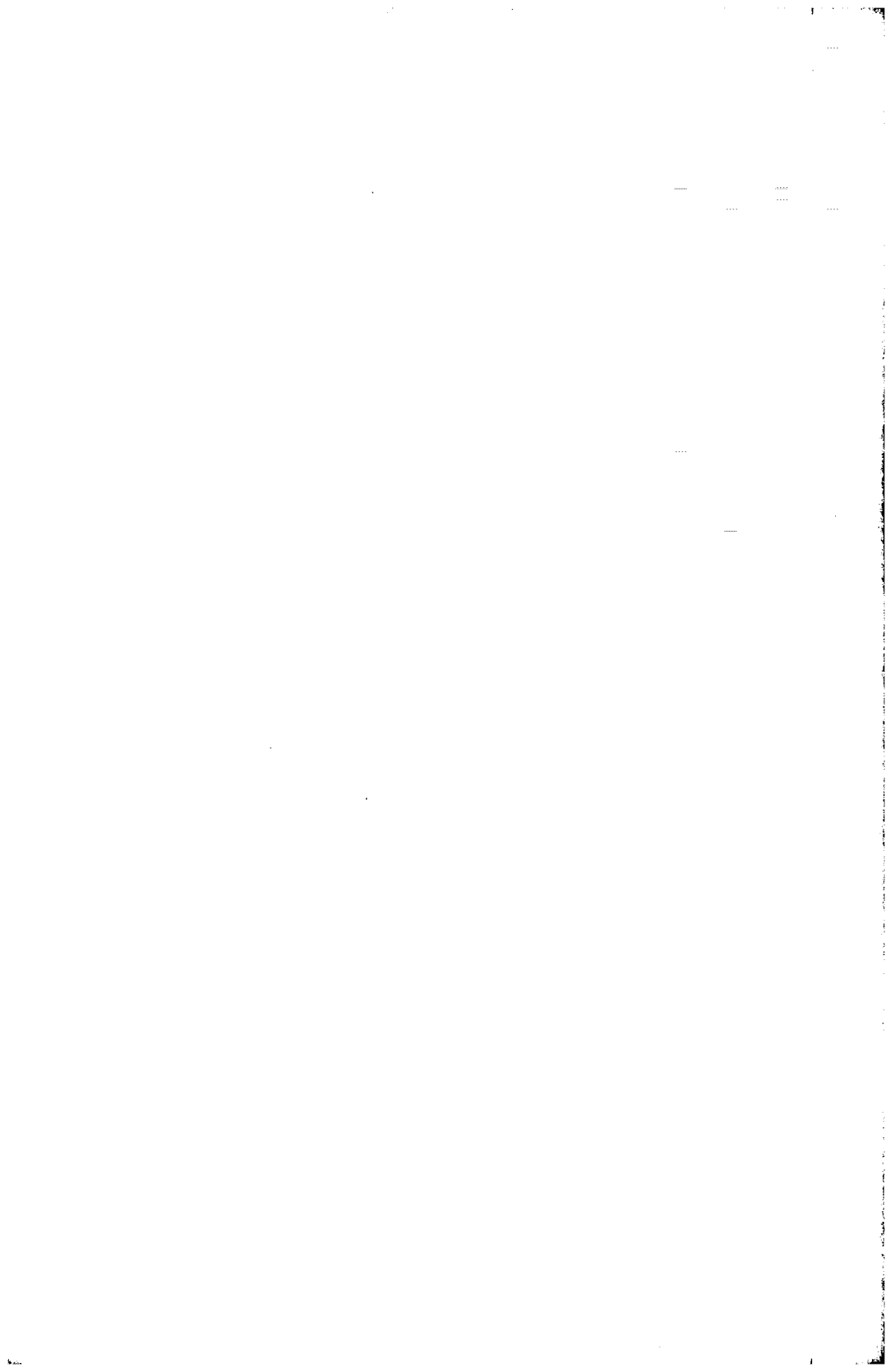
It appears to the Commission that it would be helpful if an agreement was made with all the air carriers engaged in the international sector whereby they agree to operate from Pickering, if it is opened, on a date to be specified.

The Commission is of the view that provision will have to be made at Pickering for that portion of general aviation which by its nature requires the facilities only offered at a major airport, as more fully discussed under the heading "General Aviation".

The Commission is of the opinion that there should be no partial or limited opening of the proposed Pickering Airport and that the airport should not open until such time as proper permanent terminals and other structures have been completed and all airport facilities are functionally operational, as planned, and all necessary ground access to and from the airport has been established and is in full operation. Any earlier opening, having regard to the present attitude of the general public toward the airport, would result in a most adverse attitudinal response on behalf of the general public which would take many, many years to overcome. The Commission is also of the opinion that if a decision is made to proceed with the proposed Pickering Airport, it will take at least 8

The Role of the Proposed Pickering Airport

to 10 years from the date of that decision to plan and construct all necessary airport facilities and ground access.



17. Off-Site Terminals

The evidence which the Commission heard suggests that there are a number of ways to utilize roadways in dealing with the movement of passengers, baggage and cargo, both to and from the proposed airport at Pickering, as well as between Malton Airport and the proposed Pickering Airport.

These could generally be described as providing on the one hand a number of terminals within Metropolitan Toronto to which passengers and baggage would be brought, ticketed and processed, and from which both would then be moved to the respective airports. Various refinements of this method of dealing with passengers and baggage were suggested such as having anywhere from 1 to 18 different terminals for such purposes. In addition, there were variations in procedure as to the collection of passengers, ticketing and so forth suggested.

On the other hand, as an alternative to the above method of dealing with passengers and baggage, it was suggested that a highspeed transportation system be established whereby passengers and baggage could, by recognized routes, move between the two airports and to and from the airports to various points in the Toronto Metoroplex area.

The Commission is of the view that in the light of the tremendous number of people to be moved, that the alternative last mentioned is the most appropriate. Existing transportation facilities should be utilized and where they terminate, in the case of the subways for example, there should be interconnections of highspeed buses or rapid transit in order to connect the existing lines with the airport. Where such facilities such as subways do not exist, the Commission is of the view that there should be established certain special highspeed bus routes to enable the movement

of passengers and baggage to and from the airport. This is more fully discussed under the heading "Ground Access to Airports".

However, the Commission is of the view that at these various pick-up stations, there should be established extensive parking facilities, so that a large number of private motor cars may be parked at each of them. This will result in the removal of a great deal of private motor vehicle traffic from the roads leading to and from the airports and increase passenger service and the quality of it.

There are also at the present time various rail lines which traverse the Toronto Metroplex area and which could be used to convey passengers and baggage to the airports. One of the main railways traverses the proposed Pickering Airport site itself. A go-train system similar to the present system operated by the Province of Ontario could be established. If such a system is established, there should also be established at its various stations large and extensive parking facilities.

As to whether or not it is desirable that there should be a downtown terminal or terminals established to service the Toronto International Airport at Malton or Pickering, or both, for the ticketing and processing of passengers and baggage, the Commission is of the view that these should not be established. The reason for this is that this involves problems in ticketing, custom and immigration, health and security, particularly in relation to international flights, which are all very costly and which make processing at downtown terminals impractical and undesirable. They are duplications and are meaningless. Experience in other places in the world where such facilities have been established have been failures.

18. Airport Zoning and Compensation

Airports have major effects beyond their boundaries. One area in which these effects are felt involves the regulation of the use to which may be put privately owned land bordering an airport.

A. ZONING REGULATIONS

There are at least two reasons why zoning regulations are necessary. The first involves the safe navigation of aircraft during take-off and landing. The technique which has been used in Canada is the zoning regulations under the *Aeronautics Act*, R.S.C. 1970, c. A-3, section 6(i) (j) which reads as follows:

“6. (i) Subject to the approval of the Governor in Council, the Minister may make regulations to control and regulate air navigation over Canada, including the territorial sea of Canada and all waters on the landward side thereof, and the conditions under which aircraft registered in Canada may be operated over the high seas or any territory not within Canada, and, without restricting the generality of the foregoing, may make regulations with respect to

(j) the height, use and location of buildings, structures, and objects, including objects of natural growth, situated on lands adjacent to or in the vicinity of airports, for purposes relating to navigation of aircraft and use and operation of airports, and including, for such purposes, regulations restricting, regulating or prohibiting the doing of anything or the suffering of anything to be done on such lands, or the construction or use of any such building, structure or object;”

Authority for the Parliament of Canada to make such regulations with respect to land use, was confirmed in the Supreme Court of Canada in the case of *Henry Johannsen v. The Municipality of*

*West Paul*¹. The Court held, in that case, that the subject of air navigation was a matter of national interest and importance and therefore fell within the “peace, order and good government clause” of section 91 of the *B.N.A. Act*. As a result of that decision, the Government of Canada entered into the field of land use control under its aeronautics power and introduced legislation to regulate activities on lands adjacent to airports. In 1952 the *Aeronautics Act* was amended to authorize the Minister of Transport, Canada, with the approval of Government in Council, to make regulations specifically in respect to the classes of subject matter as above set out in section 6 (i) (j) of the *Aeronautics Act*. The making of such regulations is subject to the following conditions:

- (a) a “Zoning Regulation” must be published in two successive issues of at least two newspapers serving the area where the airport is located;²
- (b) a plan and description of the lands affected by the zoning regulations signed and deposited in the same manner as the plan and description under section 9 of the *Expropriation Act*³ together with a copy of the regulation to be deposited in the Registry Office;⁴
- (c) if the Regulation is amended, a copy of the amendment (but not a copy of a new plan) must be deposited and;⁵
- (d) every person whose property is injuriously affected by the operation of a zoning regulation is entitled to recover from the Crown, as compensation, the amount by which the property is decreased in value by the enactment of the regulations less an amount equal to any increase in value of the property that occurred after the claimant became the owner of the property and is attributable to the airport⁶. Such proceedings must be brought within two years after a copy of the Regulation is deposited in the Registry Office⁷.

1 (1940) S.C.R. 292

2 section 6 (7)

3 section 4 of the *Expropriation Act*, R.S.C. 1970, 1st supplement C-I-16; section 43

4 S.O.R./53-129

5 S.O.R./55-330 to S.O.R./55-331 section 6 (9)

6 s. 6(1) S.O.R./53-129

7 s.s. 11

The current regulations only restrict the height of buildings and similar structures on the lands. There were a previous set of regulations which were made in 1953 in respect to the Malton Airport Zoning Regulations, but they were revoked in 1955.

Since 1953, nine airports in Ontario have been zoned by the Minister of Transport, Canada, Toronto Airport in 1953¹, Windsor in 1956², the Lakehead Airport in 1953³, Ottawa in 1964⁴, London in 1956⁵, Hamilton in 1967⁶, Sault St. Marie in 1969⁷, Sarnia and North Bay in 1971^{8,9}.

The second reason for regulation involves the incompatibility of certain types of land uses with an airport operation on aircraft noise sensitivity grounds. Zoning regulation for this purpose has been considered by the Government of Canada and the Province of Ontario to be matter of provincial legislative authority, some of which has been delegated to the municipalities.

In the Province of Ontario, provincial control over development in the vicinity of airports has been adumbrated by way of policy statements. The first of these policy statements was in relation to the Toronto International Airport (Malton) by the statement of the Minister of Municipal Affairs re aircraft noise and is dated October 9, 1969. The responsible Minister has power under the *Planning Act*, R.S.O. 1970, c. 349 to approve official plans and their amendments and plans of subdivision. The exercise of these powers is to be guided by noise sensitivity zone plans and land use compatibility tables as described in the statement. The Minister also has power under section 32 of the *Planning Act* to make orders which have the same effect as municipal by-laws. These orders override any municipal by-laws.

The Governments of Canada and Ontario entered into an arrangement called an Annex of Understanding, dated March 1, 1972 (which is part of Exhibit 7) set out in Schedule "A" to this

1 S.O.R./53-285

2 S.O.R./56-157

3 S.O.R./57-230

4 S.O.R./64-41

5 S.O.R./65-71

6 S.O.R./67-424

7 S.O.R./69-460

8 S.O.R./71-171

9 S.O.R./71-317

section. Under paragraphs three and four of such Annex of Understanding, the Government of Ontario has agreed to use its powers to ensure that the development of privately owned land exposed to 95 CNR contour or equivalent and above will be controlled to prevent development inconsistent with airport operations.

B. COMPENSATION FOR ZONING

It is important to emphasize that to landowners in the vicinity of airports, both Federal and Provincial regulations in respect to land use have the same effect, namely, their land, as a result of such regulations, may be less valuable because of the restrictions on development.

The crucial difference between the Federal and Provincial land use regulations is that the Government of Canada under section 6(10) of the *Aeronautics Act*, must pay damages for economic loss measured by the decrease in value of the lands caused by such regulations, while the economic loss caused by Provincial land use regulations must be borne by the landowners.

Section 6(10) of the *Aeronautics Act* reads as follows:

- (10) Every person whose property is injuriously affected by the operation of a zoning regulation is entitled to recover from Her Majesty, as compensation, the amount, if any, by which the property was decreased in value by the enactment of the regulation, minus an amount equal to any increase in the value of the property that occurred after the claimant became the owner thereof and is attributable to the airport.

The payment of compensation by the Government of Canada for land use zoning, under the above section of the *Aeronautics Act*, is a significant departure in law from that relating to provincial and municipal zoning laws and by-laws, where no compensation is payable in the event of loss flowing from a change in zoning.

In Canada, there is no constitutional principal such as the one that the Commission understands exists in the United States requiring compensation to be paid (or the by-law quashed) where a particular zoning by-law is so restrictive of the usual rights of ownership that it constitutes a "taking" of property. Indeed in

*Belfast Corporation v. O.D. Cars Ltd*¹, the House of Lords interpreted a provision of the constitution of Northern Ireland forbidding the taking of property without compensation in a very restrictive manner. Presumably, this is the law also in Canada and in the Province of Ontario.

There is a House of Lords authority² that there is no compensation for expropriation without express statutory provision. However, this does not mean that there is any constitutional prohibition or any inviolate principle at stake in enacting new provincial legislation providing for paying damages for economic loss caused by provincial or municipal land use zonings. The Government of Canada, by the amendments to the *Aeronautics Act* and the passing of regulations thereunder, is a precedent for such action.

The Province of Ontario should enact legislation providing for payment of damages for economic loss where private ownership has been reduced in value by virtue of zoning carried out for the public good. In fact, the Province of Ontario has already done so in certain areas, as for example, by the *Archaeological and Historic Sites Protection Act*, R.S.O. 1970, c. 26 as amended by *The Civil Rights Statute Law Amendment Act, 1971*, R.S.O. 1971, c.50, 5.8 which provides for compensation for any reduction in market value of land designated as an archaeological or historic site.³

Under the Annex of Understanding between the Government of Canada and the Province of Ontario dated March 1, 1972 (Schedule "A" to this section), the Government of Canada is to acquire outright about eighteen (18,000) thousand acres for the airport itself. This has been done.

Paragraph 4 of the Annex of Understanding indicates that "the Federal Government has agreed to assume financial responsibility for claims that may result from existing developed and operative uses being incompatible with the uses permitted" under the Province of Ontario regulations for land between the 95 CNR

1 (1960) H.L.

2 *Sisters of Charity of Rockingham v R.*, (1922) 2 A.C.315; *Western Counties Ry. v Annapolis Ry.*, (1882) 7 App. Cas.178.

3 A reference to the usual Ontario practice with regard to compensation for loss of property rights due to zoning by-laws, may be found in *Munro v. N.C.C.* (1965) 2 Ex. C.R. 579 at 593-97.

contour and the airport boundary. However, the Province of Ontario controls referred to in paragraph 3 of Annex of Understanding only mention the prevention of future incompatible development. Therefore, neither the Government of Canada nor the Province of Ontario is bound to pay anyone for economic loss occasioned by virtue of zoning limitation on the use of his land between the 95 CNR and the airport boundary.

While it only indirectly concerns the matters before this Commission, it is worthy of note that there has always been a reluctance to accept the idea that the Province of Ontario, by the exercise of its planning legislation and the municipalities by the exercise of delegated authority, should be able to take away the property rights of an individual for the benefit of the Province or the community as a whole without commensurate compensation. In the light of the present widespread use of zoning by the provinces and municipalities, for example, to "freeze" the use of land for some future public purpose, of which airport purposes is merely one, it is desirable that some equitable solution, by way of provincial legislation, should now be found. Surely an owner should not be deprived of the full and potential use of his own lands for the public good without compensation.^{1,2} Surely a statutory right to compensation should be given.

C. ADDITIONAL LAND ACQUISITION AT SITE NEAR PICKERING

If the proposed Pickering Airport is built, the Government of Canada should acquire additional lands. This should be done to avoid repeating the situation which now exists at Malton in respect to the problem of noise disturbance from aircraft operations. The Commission has noted in this chapter, under the heading "Noise Disturbance from Aircraft Operations", that the 28 NEF contour is too close to Claremont and Stouffville and perhaps some areas

1 Compare the House of Lords case *Belfast Corporation v. O.D. Cars Ltd (supra)*, which says inherently there should be compensation paid when the Crown takes title or partial title to land.

2 As a practical matter, in relation to all the Province of Ontario and municipal zoning which subtracts from the title to the lands of an individual for the public good, it may be desirable that there should be statutory compensation paid under two broad categories, namely (1) for the economic loss suffered by the exercise of provincial or municipal land use controls, and (2) for all of the other damages suffered by an individual in addition to demonstrable economic loss.

comprising the Town of Markham. Under the same heading, the Commission also noted that it does not accept that the level of noise represented by a 28 or 30 NEF contour can be regarded as a level of noise which will be found tolerable by residents of those said communities who historically have been accustomed to a low level of background noise. The Commission suggests that the Government of Canada should offer to buy the lands of persons in those said communities who have concern in respect to the future use and enjoyment of their lands as result of future possible noise disturbance from aircraft operations. Those persons who do in fact sell their lands to the Government of Canada should have the right or option, in the contract of sale, to repurchase the lands from the Government of Canada at any time within six months after the date of sale. This would provide such persons with an opportunity to change their minds, after further consideration, if they wish to do so. An existing land owner would only be able to avail himself of this opportunity once. This proposal would not apply to future land owners.

**SCHEDULE "A" to AIRPORT
ZONING AND COMPENSATION**

March 1, 1972

Annex of Understanding

1. The Governments of Canada and Ontario have agreed to the establishment of a major airport in Pickering Township in an area roughly between a line just north of Highway 7 in the south, north to the Uxbridge/Pickering Township boundary and between the Little Rouge Creek on the west and East Duffin Creek on the east. Each of our Governments is committed to carrying out certain actions in respect to this development. The extent of commitment of funds in any one year is subject to the necessary Parliamentary and legislative authorities being received by the respective governments.
2. The Federal Government will acquire through the Federal Expropriation Act an area of some 18,000 acres. Under this Act the Federal Government will register Notice of Intention to expropriate this land. The exact area to be acquired for airport operations will include all land within the 115 CNR (Composite Noise Rating) contour.
3. The Government of Ontario has agreed to act within the full extent of its legislative authority to ensure that lands exposed to 95 CNR contour or equivalent and above will be controlled to prevent development inconsistent with airport operations. The Government of Ontario has agreed to issue a Ministerial Order under Section 32 of the Planning Act, subject to item 4 below, establishing development controls on lands to which the statute is

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applicable within the area between the CNR contour of 95 or its equivalent, for the final runway configuration for ultimate airport development, and the airport boundary. It will also recommend against local zoning changes or severances inconsistent with such development controls and will not approve any official plans, or plans of sub-divisions inconsistent with such development controls. The Government of Ontario will discuss with local municipalities the development or modification of official plans so as to seek to make them consistent with airport operations. When such consistency is achieved the Minister may withdraw direct provincial controls.

4. For land between the 95 CNR contour or equivalent, and the airport boundary, the Federal Government has agreed to assume financial responsibility for claims that may result from existing developed and operative uses being incompatible with the uses permitted under the development controls introduced under Section 3 above.
5. The Government of Ontario has agreed to provide basic services normally provided by the Province to the airport boundaries, subject to any Federal/Provincial sharing agreements now in force or which may be developed.
6. The Federal Government accepts the principle of its responsibility for meeting certain incremental costs uniquely attributable to services and facilities required by the airport but outside airport boundary as mutually agreed.
7. The Federal Government has agreed to assume financial responsibility for the relocation of certain services from the airport lands. The exact sums involved will be determined when the nature of the services dislocated has been established, and the extent to which such services could continue to be used, despite passing through airport property, has been determined.
8. The Federal Government has agreed that there will be a joint Federal/Provincial study of all transportation requirements to serve the airport and its related communities and an agreement will later be reached on an appropriate sharing of expenditures on transportation facilities. The Federal Government has recognized a particular interest in the provision of rapid transit facilities.
9. The Government of Ontario has agreed to acquire some 25,000 acres of land adjacent to the airport for the development of a new community proposed by the Toronto-Centred Region Plan, as modified to incorporate the new Northeast airport, and for transportation and service corridors associated with that Plan.
10. Through relevant Federal Statutes and programmes, now in force or to be developed, the Federal Government has agreed to contribute financially to the cost of land assembled by the Government of Ontario for the purposes stated in 9 above.
11. The Governments of Canada and Ontario have agreed to a joint study of potential use of the Island Airport.
12. The Governments of Canada and Ontario have agreed that the existing Federal/Provincial Committee should be continued to study cooperative aspects of implementation.

19. An Airport and Its Planning

Planning an airport in the Toronto Metroplex area only for the next ten years is not adequate. If the Toronto Metroplex and all other major regions in Canada are to prepare for air transportation in the 1980's, and beyond the horizon year 2000, it is necessary that all elements in the future national air system be developed compatibly. The steps necessary for long term airports and ground access must be taken now.

This means that the future air system in the Toronto Metroplex area to serve the central Ontario market must be defined as quickly as possible. Until this is done, provincial, municipal and communities cannot designate suitable land for access to the airports; manufacturers cannot design suitable ground vehicles; the carriers cannot plan suitable route structures; the Government of Canada cannot develop suitable air controls.

Legislation should be enacted now to achieve the optimum long-term system for the Toronto Metroplex area to serve the central Ontario market.

What is needed, now, is general Federal, Provincial, Municipal, industry and community agreement, and legislation at each appropriate level to implement a broad form of air transportation and ancillary ground facilities not only for the 1980's but for the long-term beyond 2000.

The Commission has considered and discussed the air transportation needs of the central Ontario market to the year 2000, as directed by the Order in Council. From to-day to the year 2000 is only a span of 26 years.

When Malton was opened in 1938 in the centre of a rural area, it was believed that it would remain indefinitely beyond any built up area. In the 36 years that have elapsed since its opening, Malton

is now facing the problem of capacity and has already established itself as an undesirable neighbour.

The substantial investment required for the establishment of a new airport dictates that the life of that airport must be for more than a 26 or 36 year period.

It seems appropriate to the Commission at this time to pause and reflect about such matters as the persons who use an airport, the nature of an airport, the basis for the situation in which most airports now find themselves and whether anything can be done in the future to prevent a repetition of the past.

One only needs to go to an airport to see the broad section of the community who avail themselves of the air transportation system. They range from the businessman; the tourist; the immigrant coming to Canada or returning to his native land for a visit; especially in August, the Maritimer returning to the east to see his family and to renew old acquaintances; the student who now travels extensively around the world. In short, one finds a mixture of people of varying ages, varying aspirations and from the various facets of society which make up the community in which one lives. Whether the reasonable demands of these people will be met is dependent upon whether our air transportation system is expanded to handle them either through the expansion of existing facilities or the creation of new facilities.

It is important to consider the effect of the air transportation system on the economic well-being of a community and the nation. Without a healthy economy, a community cannot build housing, it cannot meet the demands for other services such as parks, recreational areas, schools, and the many other services demanded from Governments. Our national economy must grow if our nation and the communities that compose it are to prosper. Our air transportation system which forms an integral part of our economy must also grow if the future economic potential of our country is to be realized. If constraints are placed on our air transportation system, it will have a serious negative impact on the nation's economic development at all levels.

As our population and overall economy grows, a larger portion of our total population will place a greater demand on the air transportation system for the transport of persons and goods. Our major airports will share in this growth and will provide the

communities which they serve with ever increasing benefits essential to their prosperity only if airport facilities are available in time to adequately accommodate the levels of traffic which demand for air service will generate. If a community does not provide the necessary facilities to accommodate the demand, commerce and industry will locate in communities which are prepared to provide the necessary facilities to meet such demand.

It should be noted that the air transportation system is the backbone of our national passenger transportation system, which is so vital in linking our vast areas together. It must be preserved and expanded.

The problems facing the expansion of Malton within its existing boundaries are not peculiar to Malton alone but are shared by most of the airports serving the major metropolitan areas of the world.

The question arises as to why the air transportation system finds itself in the situation which now confronts it. The introduction of the first generation jet aircraft followed by the second generation wide-bodied aircraft and the resulting tremendous growth in the air transportation system provided a great challenge to the air transportation system. There was no historical experience to which it could turn for assistance in coping with this challenge. As a consequence, appendages connected by long concourses have been added to existing inadequate terminal buildings. Parking lots were enlarged and new parking lots were created in areas of the airport which are not readily and conveniently accessible. Airspace and runway capacity have reached capacity resulting in untenable delays on take-off and landing. A trip to the airport has become a major chore, especially in the peak hour when airport destined traffic must compete with the demands placed on our road system by regional commuter traffic and recreational traffic. The relationship between the airport and its neighbours is bordering on a state of open warfare as result of noise disturbances from aircraft operations to the communities surrounding the airport.

There is a need for most of the major airports of the world to expand their boundaries, or in the alternative, to establish a second airport to enable the air transportation system to discharge its responsibilities to the community it serves. However, the action of opposition groups have prevented an expansion of the airport

boundaries and have prevented the establishment of new airports. This has led to attempts to increase the capacity of existing airports which are already incapable of meeting present demand, let alone any increase future demand. As a consequence, stop-gap measures have been introduced such as off-site terminals, dual lane runways, various forms of curfews, an inefficient preferential runway system and various noise abatement flight procedures. Longitudinal terminal buildings have been constructed with regard only for the accommodation of the greatest number of passengers on the minimum space available. Passengers are transferred from terminal buildings to waiting aircraft in remote parts of the airport by various vehicles which require not only a capital expenditure for their purchase but also require continual expenditure for their operation. The distance for a passenger between his parked automobile and the boarding gate has become a herculean challenge. The movement of vehicles and persons on the internal roadways of an airport has become, at times, complete disorganization. The result has been a substantial economic penalty to the air transportation system, a risk to the safety of the air passenger and a depressing nightmare to the individual and his family.

Those who oppose the expansion of an existing airport or the establishment of a second airport, for the most part, consist of persons with a wide range of sharply differing viewpoints.

People who declare war on airports often do not really have all the facts, nor weigh all the issues. They do not seem to understand the nature of people, where they live, how they live, and what they do with themselves and where and why and how often they move around nor how a community functions. They do not appreciate the specialized nature of the service performed by the air transportation system which is the rapid conveyance of goods and people over great distances. They overlook the enrichment to life which air transportation has bought. All the facets offered by the air transportation system add up to a way of life which the travelling public has not shown the slightest interest nor the slightest sign of giving up, and why should it?

There is a need for less hypocrisy in the approach to air transportation. There must be an acknowledgement of the fact that the airplane is the fastest, most economic and most convenient device for the movement of people and certain goods that has ever

been invented and that not only the preservation of the air transportation system, but the expansion of the air transportation system to continue to make it an efficient, economic and as convenient a mode of transportation as possible for all our citizens and cargo is a legitimate goal of Government.

An airport can be a good neighbour in a community, if properly planned well enough in advance.

An airport to be efficient must be located as close to the market which it is to serve as is reasonably feasible. The Toronto Metroplex is the envy of most of the great metropolitan centres of the world in that it has the opportunity to establish a second airport within 30 miles of its centre.

If a decision is made to proceed with the proposed Pickering Airport, there are two alternatives which must be considered. The airport can be planned to meet only the air transportation needs of the central Ontario market to the year 2000. The selection of this alternative incurs the risk that at some future time the boundaries of the airport will have to be expanded due to unforeseen factors which will take place between now and the year 2000, or beyond the year 2000, which were not taken into consideration or not possible to consider to-day. This will result in a revival of all the problems, economic, social and environmental, which confront the expansion of existing airports to-day. The other alternative is to develop now a master plan for the ultimate development of the new airport. This would provide an opportunity in the future to expand the various components that make up an airport, and even change their functions, as future changes develop, without the necessity of enlarging the airport boundaries. There is historical precedent and experience from which we can draw in planning an airport for the future. From past experience, we know that airspace, runways, taxi-ways, aprons, terminals, parking areas, internal roadways, and ground access to the airport are not independent functions but are integral and inseparable parts of a whole airport system. We also know that an accommodation must be established between an airport and its neighbours if a healthy and expanding air transportation system is to be achieved.

We have learned that in order to find an accommodation between an airport and its neighbours the noise from aircraft operations must be kept within the boundaries of the airport. In the

past, attempts to achieve this goal were made by forecasting the level of aircraft noise by means of the Composite Noise Rating system and Noise Number Index. Both of these efforts turned out to be unsuccessful because the growth in aircraft movements, the noise characteristics of new aircraft and the increase in the size and in the gross maximum weight of new aircraft could not be foreseen. The Commission has mentioned the weaknesses which it foresees in the application of the NEF system at Pickering.

There are a number of facts which we do know which should be considered in an attempt to keep the noise from aircraft operations within the boundaries of the airport. We know that the noise characteristics of future aircraft are not likely to exceed the noise characteristics of the noisiest aircraft flying to-day. We know that as other components of the jet engine are being quieted, other noises appear, such as core noise predominating. We know that an increase in aircraft movements causes an increase in the noise levels from aircraft operations. We know that aerodynamics will probably be a significant noise problem in the future. We know from past experience that future developments may produce noise characteristics which cannot now be contemplated. We also know that life styles do not remain constant but become more demanding with the passage of time which in turn affects a person's attitudinal response in respect to the level of noise which he will tolerate.

It appears to the Commission, that having regard to this foreknowledge, an appropriate approach to the problem is to first determine the maximum number of aircraft movements that can be accommodated in the airspace over and around the Pickering site by means of a computer simulation.

The next step is to draw noise contours based upon the assumption that all aircraft movements in that airspace will have the noise characteristics of a 707-320. The boundaries of the airport should then be drawn at the 95 EPNdB contour. With the 707-320 being representative of the noisiest aircraft presently flying, such a boundary should provide a greater degree of assurance, than present methods, that accommodation will be achieved and maintained between the airport and its neighbours when the airport reaches its ultimate stage of development. Of course, appropriate land use planning outside the airport boundaries will also be required.

The determination of the maximum number of aircraft movements that can be accommodated in the airspace above and around the Pickering site will be of invaluable assistance in the formulation of a master plan for the ultimate development of the airport site. Such a determination will tell us the maximum number of passengers that can be handled at the Pickering site, the maximum number of runways that will be required, the maximum area which will have to be set aside and safeguarded for ground access rights-of-way, the maximum number of parking areas, the maximum number of internal roadways and the maximum number of gates that can be made available for aircraft. This in turn will facilitate the planning of the airport in a manner that the processing of passengers, freight and the parking of automobiles will be as close as possible to the immediate vicinity of the appropriate aircraft and in the numbers necessary to support saturation aircraft schedules. The transfer of passengers and baggage between the aircraft and the automobile will be accomplished rapidly and efficiently with walking distances greatly less than at present.

Passenger terminals must be designed to afford the maximum convenience to the passenger with short walks from ticketing to the boarding gate for enplaning passengers and from the plane door to the baggage claim and service transportation for deplaning passengers. Terminals should no longer be designed to suit the dictates of the airlines. It should be possible for a passenger who has purchased his ticket prior to arriving at the airport terminal to check his baggage before entering the terminal door. On entering the terminal and approaching the ticketing and boarding pass processing areas, he should no longer have to join battle with others who are converging from all directions upon the processing clerks standing behind long open counters. He should be entitled to find a much more convenient system of processing such as the individual herring-bone processing system established at the international terminal at Heathrow Airport. During the wait for the departure of his aircraft, or between inter-connecting flights, there should be some area to which he may resort away from the hubbub of general terminal activity. There should be a variety of quality refreshment and restaurant facilities available to him to meet both the demands of his appetite and his pocket. No advantage should be taken of the

fact that he is a captive customer. There should also be a variety of service shops and retail shops to meet his needs.

On arrival at the airport, after an international flight, he should not be required to walk long distances with his cabin baggage to claim his other baggage and then walk with all his baggage to a central immigration and customs clearance area. Nor should he be required after obtaining clearance to plunge his way through a hoard of greeters. Baggage claim should be as close as possible to the aircraft gate as is planned by the uncomplicated baggage system for the new Tegel Airport. Customs and immigration should be decentralized. An ample supply of baggage carts should be made available to assist the air passenger in moving his baggage to and from the terminal.

A form of the semi-circular terminal buildings established at the new Dallas/Fort Worth Airport commends consideration. It was proposed to use such a concept at the proposed Maplin Airport, and it is proposed to use this concept for future terminals at the Charles DeGaulle Airport.

The Commission has noted under the heading "Ground Access" that all modes of ground transportation will be required in order to meet the needs of the forecasted number of passengers.

High speed multi-lane highways will have to be provided which will connect to the internal roadway system of the airport. The internal roadway system should pass in front of the terminal door to permit the passenger to be driven as close as possible to the aircraft gate.

Provisions should be made for a maximum band of land required for highway access not only to meet present needs but also future needs. By determining the maximum number of aircraft movements that can be accommodated at the Pickering site, and thereby the maximum number of passengers that can be handled at the Pickering site, the maximum band required for highways can be determined, set aside and protected, so that ground access does not become a problem in the future, as is the case in many major airports of the world. Highways can be developed within the band as growth demands. A limited number of interchanges will have to be provided, so that connection can be made with general purpose road networks to enable traffic to disperse in a variety of directions

to other parts of the region. In fixing the size of the band, consideration must be given to trips to the airport by greeters, well-wishers, sightseers, airport and airline employees, for business purposes or cargo purposes, and trips by "other persons" as well. The demands of airport destined highway trips will have to be considered with general road traffic in the area and the new traffic which will be generated by new urban areas following the development of the airport. An attempt was made to meet this problem in the Paris area by designating one lane of a multi-laned highway for the exclusive use of taxis, public limousines and buses. The experiment has not proven itself to be successful and has resulted in a sense of injustice by other users of the highways. Current plans are to abandon the exclusive lane. It should also be noted that reservation of one lane of a multi-lane highway for airport destined vehicles does not begin to tackle the problem. It may be necessary in order to ensure good highway access to the airport to establish toll roads. During peak hours non-airport destined trips could be charged a greater toll in order to maintain rapid access for airport destined trips.

Some of the factors which should be considered when planning for a transit system to the airport are:

1. It should be capable of being developed in phase with the expansion of the airport.
2. It should be capable of meeting the demands of a fully developed airport.
3. The initial system should be within the capability and availability of equipment and proven reliability and performance.
4. It should lend itself to proposed subsequent development or replacement without a break of service.
5. It should provide direct service to and from all destinations inside the airport with no change of mode and be capable of providing a frequency of service to each destination within the airport to meet demands and have the ability to operate economically at lower frequency during less busy periods.
6. It must provide an adequate and convenient storage of baggage.
7. It should complement facilities for boarding and disembarking at both the in-town terminals and airport terminals.

8. It must provide a high frequency rate of service, so that waiting times both at the in-town station and the airport station are minimal.

At some of the major airports, there are forms of transit and rail to the airport boundary where air passengers must change to another mode of transport in order to reach the terminal building. As a consequence, those systems have experienced a low level of use. It has also been the experience at all airports serviced by a transit system that if the time of the trip exceeds the time of the automobile trip, to any great extent, the automobile will be the overwhelming choice of mode of ground access to the airport.

Parking aprons adjacent to the terminals must be designed to handle the huge aircraft of the future.

Sufficient provision must be made by way of gates, warehouses and buildings required for freight and forwarders to meet the forecasted growth in air cargo. Air cargo would be allowed to operate freed of curfews.

Provision should be made for STOL services to operate to and from the airport with the STOL operation providing support or feeder service. Provision will have to be made for high performance general aviation aircraft movements until such time as economic circumstances and growth of such movements warrant the establishment of an exclusive general aviation airport with sophisticated air traffic control and ground navigational facilities.

The lands within the airport boundaries should not merely be limited to airport related activities. An opportunity should be afforded to the air traveller to seek some refuge from the hustle of airport activity. Under the topic "Environmental Aspects", the Commission has mentioned a number of buildings which are scattered throughout the site and which have an architectural historical significance to this area. Some of these buildings could be relocated on one site on the airport lands and refurbished. They then could be put to service as, restaurants and shops. Such a development would provide welcome relief to the air passenger who has a long wait between interconnecting flights or who has a delayed departure.

Through careful planning of the airport, including engineering and construction, many existing environmental features of a proposed airport site and the area outside its boundaries can be

protected and preserved. A separate drainage system can be installed for aircraft aprons, where the potential for fuel spillage is high. The effluent of such system can be specially treated before it enters into any neighbouring creek or stream. By this means, the quality of the existing water of a creek or stream can be preserved. Lands of an airport not required immediately for airport related facilities can be used in a number of ways. Lands that have been cleared for agricultural use can be leased for compatible farming operations. Existing wood lots, which will not interfere with flight operations, can be maintained as conservation areas. Runways can be located and flight paths established, subject to airside requirements, in such a manner as to minimize disruption to the lands within the airport boundaries and to the natural environment outside the airport boundaries. In this manner, noise disturbance to nearby conservation areas or a zoo can be minimized as much as possible. These are but a few of the examples of the ways that disruption to the environment can be minimized.

It is fortunate that the Province of Ontario plans to establish a new community adjacent to the airport site. The new community will provide housing that will be needed to sustain a properly phased build-up of workers for the airport and for those who will provide the services which the new airport families will need. Development of the new community must at least always equal the phased growth of the airport. A high standard of local services and amenities will have to be provided in this community to attract the level of population growth which the airport project as a whole will demand.

About a third of the jobs at an airport call for specific skills: air crew, maintenance engineers, air traffic controllers for which recruitment may be required at a national level. Many of the jobs at the airport and those in associated industries and local services will not be so specialized and can provide a range of job opportunities for people in some of the housing stressed areas of Metropolitan Toronto. This could mean that the traditional outward movement of people from the Metropolitan Toronto area in search of better housing need not, as in the past, involve long journeys to work in Metropolitan Toronto. Ancillary airport activities and services such

as hotels, freight forwarding, new industrial and commercial enterprises could benefit from being near an airport. The major improvements in the communications of the area and the general upswing in building and population growth could attract new industry and commerce. However, the new community must be planned in such a manner as to seek accommodation with the airport not only to the year 2000 but to the year in which the airport will develop to its maximum. This will be a novel experience from the present situation that now exists in which airports must seek accommodation with existing communities.

The time required for the planning and construction of an airport can take from 6 to 10 years. The new Dallas/Fort Worth Airport was constructed in 6 years. However, this was under ideal circumstances. There was no shortage of manpower, material and supplies, and there were no strikes, and of course, the area was not subject to a Canadian winter. But, in the words of the Executive Director of the Dallas/Fort Worth Airport, "We really had to push". It took 10 years from the date of the decision to build Charles deGaulle Airport to its opening date. Although the airport was opened 10 years after the decision to build, the problem of ground access to the airport and interconnecting ground access to Orly Airport has not been resolved. The problem of ground access to the Charles DeGaulle Airport has resulted in much criticism of the new airport. It was estimated that it would take 10 years to build the proposed Maplin Airport and related ground access.

The Commission has previously mentioned the problem of the existing mixed attitude in the minds of the general public as to the need for and the location of the proposed Pickering Airport. The Commission has also cautioned as to the dangers of an opening of the proposed Pickering Airport, if there is a decision to proceed, before all immediate permanent structures have been completed and the airport is fully operational, as planned, and efficient ground access has been established. As far as the actual airport is concerned, there are bound to be certain matters which will not operate as planned. However, all major items should be completely operational such as baggage carousels, any escalators, elevators, moving walkways, in general, all items that will materially affect the convenience of passengers. Past experience indicates that if an airport is opened before all flaws in these major items, including

access, have been resolved, an adverse attitudinal response will develop in the minds of the passengers that will take some time to overcome.

An airport system which is capable of being expanded to meet the continually growing needs of the central Ontario market is absolutely essential, not only for the well-being of the central Ontario region, but also for the well-being of the Province of Ontario as a whole.

As previously noted, 90% of the passengers now using Malton Airport are from the Toronto Metroplex. It is estimated that by the year 2000, 80% of the persons using the central Ontario air transportation system will be from the Toronto Metroplex.

The present trend toward a greater passenger occupancy of aircraft leaving and arriving at Malton, and the projected continuation of this trend will require a greater number of direct flights from Toronto Metroplex, if air transportation is to be operated in the most economic and convenient manner for the passenger. Also, the forecasted growth in air cargo which will continue to depend substantially on wide-bodied passenger aircraft for movement, will require that there be as many direct flights as possible to and from the Toronto Metroplex.

Many of the airports serving the major cities in the United States are facing saturation problems that cannot be overcome. An expanded central Ontario air transportation system offers the Toronto Metroplex the opportunity to become the gateway to the North American heartland.

There is a need now to acquaint the public with all the facts. Once the facts have been fully explained, the public will be able to satisfy itself as to the urgency of the problem.

There is an opportunity now to plan and build a new airport that will be efficient and adequate to meet the present and future needs of a healthy air transportation system which the central Ontario market requires. If care is taken, it can be planned in a manner that will make it convenient and enjoyable to the air passenger, that will make it a good neighbour which can live in a civilized manner in harmony with its environmental setting.

Canada has many good competent people. However, a sense of national pride should not deter efforts to obtain the contribution

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of the best airport planners in the world. There is now no excuse for a repetition of the past.

20. An Airport Authority

There is a world-wide trend towards the establishment of an Airport Commission, Board or Authority for the ownership, management, planning, and operation of an airport or airports. Such an Airport Authority may be charged with the responsibility of managing an airport serving a particular region, or its responsibility may extend to airports serving several regions.

An Airport Authority, Board or Commission has long been known in the United States for the financing, management and operation of airports. An Airport Authority has existed for many years in Berlin. Aéroport de Paris was established in 1945 for the management of airports in the Paris region. It now has responsibility for Orly Airport, Le Bourget Airport, and the newly opened Charles DeGaulle Airport. In 1965, the United Kingdom established the British Airports Authority to own and operate airports under its authority. Initially, the control of five airports which serve the London region and Scotland was vested in the British Airports Authority. Discussions are nearing completion to extend the control of the British Airports Authority to several more airports located in various regions in Scotland and England. On July 1, 1974, responsibility for the management, planning and operation of the Leonardo de Vinci Airport in Rome was separated from the Department of Transport of Italy and vested in a newly established Rome Airport Authority.

It appears to the Commission that there are many advantages to be gained by the separation of the planning, management and operation of airports from the other important responsibilities of the Ministry of Transport, Canada, in the air transportation system.

The Ministry of Transport, Canada, would be freed from the day to day problems associated with the development and operation of airports. It could concentrate on the development of a comprehensive balanced plan for a national aviation system which would include the development of rational service patterns, the development of air vehicles, the location of required airport service and airspace control all so vital for an efficient and economical national air transportation system. The Ministry would continue its vital functions of establishing standards for aerodromes and certifying aerodromes. It would continue to be responsible for the licensing of pilots and the registration of aircraft. It would continue to be responsible for safety in the air transportation system including the establishment of air navigation orders and regulations to govern operating practices and procedures. It would continue to be responsible for air traffic control procedures and the providing of air traffic control and navigational facilities. It would assume responsibility for the development of noise certification standards for aircraft and noise abatement flight procedures including all necessary testing before any such procedures are implemented. In addition, the Ministry of Transport, Canada, would assume a new function, that of the establishment of an annual budget to be met by the Airport Authority. There appears to the Commission to be no valid reason why our airports should be operated at a financial loss. Having regard to the substantial investment that has been made and will have to be made in our airports, they should produce a return on that investment.

The Airport Authority should be vested with authority for the planning, development, and management of the air transportation system serving the central Ontario market as a total system. This would include control over general aviation airports as well as major airports serving the region. It would be responsible for the efficient and economic co-ordination of these airports. At the major airports, which it would own, it would be responsible, subject to Ministry of Transport, Canada, certification standards, for the establishment of terminals, runways, taxi-ways, aprons, freight warehouses, parking areas, internal roadways and rapid transit lines, and all non-airport related activities conducted on the airport lands.

It would construct the passenger terminal, lease terminal space to the airlines and maintain control over the leasehold improvements effected to the leased space. While the Authority should cooperate with the airlines as much as possible, it must discharge its ultimate responsibility which should be convenience and consideration of passengers.

The Authority would be responsible to ensure that there is sufficient variety of quality restaurants and refreshment facilities to meet the varying tastes and financial situations of the passengers. It would be the responsibility of the Authority to ensure that no advantage is taken of the fact that a passenger is a captive customer. The Authority would be responsible for determining the other types of services that should be provided for the convenience of passengers and the variety of retail shops that should be established. The Authority would assume responsibility for establishing standards of furnishing of all leased space and standards of performance to be observed by all leaseholders.

The Authority would have responsibility for architectural control in the design of structures that would be erected on site by others, such as hangars of airlines, so that there is an architectural harmony in all structures erected on the airport land.

The Airport Authority must have authority over the control of public motor vehicle modes of transport to the airports. This will entail the granting of exclusive franchise to operators. Precedent has proven that unless an exclusive franchise is granted to a limousine service for the transport of passengers to and from the airport, there is no way of ensuring that there will be an adequate number of good quality vehicles to serve the passenger at a reasonable price, at all hours, to whatever destination the passenger wishes. The alternative to such a system is the unsatisfactory situation which now exists at Malton.

The Authority should also have power to grant an exclusive franchise to a bus operator. In this manner, the Authority can set standards for the type of vehicle in order to provide a comfortable and convenient ride to and from the airport which should encourage a greater use of bus transportation over that of present experience.

The decision as to the type of rapid transit system that will be chosen to provide access to the airport will have to be made by a

cooperative effort on the part of the Airport Authority and the Rapid Transit Authority, if public acceptance of the rapid transit system is to be achieved. In making a selection of a particular type of rapid transit system, care must be given to ensure that such a system is within the capability and availability of equipment and proven reliability and performance. Such a system must be capable of being developed in phase with the expansion of the airport, and of being integrated with the airport facilities.

Ultimate authority for selection of highway express routes to the airport, and the determination of the number and location of interchanges from those express routes will, of course, remain with the Province. But close cooperation between the Authority and the Province of Ontario will be essential.

In sum, the Airport Authority should have power to do anything which is calculated to facilitate the discharge of its duty, that is the development of an efficient and economic air transportation system to serve the central Ontario market and which will meet all reasonable demands for the transport of passengers and goods.

The skill in directing any great enterprise requires the blending of the talent of part-time outsiders, preferably a majority, and full-time insiders who do the actual management of the business. The part-time outsiders are represented by the Board of Directors. The Board of Directors should be responsible for establishing policy and broad guidelines. The Board of Directors should be composed of interested citizens who can bring an outward looking and emotionally semi-detached viewpoint to the resolution of the problems which will confront the Authority. The full-time insiders are represented by an Executive Management Board who can bring a practical inward looking and an emotionally dedicated expertise to the execution of the policy and guidelines established by the Board of Directors. The respective roles of the two boards should be harmonized but not confused.

After the Airport Authority has become accustomed to coping with the air transportation problems in the central Ontario system, its authority and control should be extended to other regions which depend upon the major airports in the central Ontario region for long-haul air transportation service. This will have several advantages. It will permit greater integration and coordination of the system as a total system. It will provide the new regions with the

benefit of the skills and expertise it has developed. It will provide a greater scope of opportunity for advancement to the full time employees of the Authority which will encourage the best people to join the employe of the Airport Authority. It will provide the new regions with a readily resource of expertise which would not otherwise be available to them.

In the past, the development of many great projects has been hampered by the lack of unanimity at the three levels of government due to the absence of a mechanism for effecting decisions without frustrating delays. There are good capable people in government, but they cannot be asked to accomplish great things with poor machinery. In the Toronto Metroplex, there is a multiplicity of regional and municipal governments which have demonstrated different approaches and attitudes towards the proposed new airport. It appears to the Commission that it will be an insurmountable task to build the proposed Pickering Airport if unanimity of all these regional and municipal governments must be obtained. It is encouraging to note the degree of cooperation that has prevailed between the Government of Canada and the Province of Ontario in respect to the proposed Pickering Airport as demonstrated by the publicly announced Annex of Understanding between the two Governments.

There is a tendency on the part of all governments to overlook the fact that they all derive their authority from the same source, that they all exist primarily to serve the public interest and all obtain their financial resources from the same source. The central Ontario transportation system is not just a regional asset, it is not just a provincial asset, but it is a national asset vital to the economic and social well-being of the entire country. This should be uppermost in the minds of all levels of government. If we are to avail ourselves of the present opportunity to preserve and expand the central Ontario transportation system, so that it may make its important contribution to the well-being of the nation, all governments will have to surrender some of their jurisdiction to the Airport Authority.



CHAPTER V

Conclusions

As already mentioned, this Commission has been engaged in the examination of the matters referred to it by the Order in Council P.C. 1973-3026 in relation to the air transportation needs of the central Ontario market since November, 1973. It has heard oral testimony from hundreds of witnesses, which was tested by cross-examination conducted by many experienced counsel representing all points of view, which recorded testimony consists of over a million and a half words. It has read and considered over 569 exhibits, filed, many of which consist of hundreds of pages. It has read articles, treatises and studies on the relevant problems in the air transportation industry which have been published throughout the world. It has talked personally, extending over many hours, with many persons, both in the United States, and in Europe, actively engaged in the airport industry and whose life's work has been in such industry. It has discussed with such persons, in detail, all of the problems with which it is concerned. Using this amalgam of information from all these sources, and after considering such carefully, the Commission has reached the views set out in Chapter IV upon which the answers in Chapter III were founded.

The Public Hearings were well attended and followed by a large segment of the public in order to be informed of the correct facts in respect to the air transportation needs of the central Ontario Market.

To ascertain the correct facts, it necessitated the magnitude of research, the quantum and quality of the evidence adduced and the

consideration of this evidence that was had and done. Much of the evidence needed the test of the searching cross-examination to which it was subjected.

It also necessitated broad consultation with experts in the United States and Europe whose whole lives, in the main, have been devoted to the day to day operations of airports, and who have experienced and are experiencing its continuing evolution.

Acknowledging that many members of the public have shown an interest in the work of the Commission and its conclusions, and may not have the time to read this whole Report, immediately, there is set out in this chapter an outline of the views of the Commission on some of the more salient matters, the full details of which are more particularly set out in Chapter IV.

A. HISTORICAL PROBLEMS

1. Every major airport authority in the world (except those that have already built new airport facilities, as for example in Dallas/Fort Worth and in West Berlin (New Tegel) has concluded that its present airport facilities are inadequate for the future demand of one decade hence for the air transportation of passengers and cargo.

2. Every one of such major airport authorities has met extremely strong resistance from the communities surrounding their respective airport site or from environmentalists generally, on the basis of intrusion into the community.

3. The resistance of such persons has been articulated by an attack on two bases, namely, that there is no need, in that the forecasts of air traffic demand are overstated, or alternatively, if the figures of the forecasts are valid, that the location of a proposed airport site is wrong, in that it should be built somewhere else.

B. FUTURE PROBLEMS

In assessing what those responsible for building new airport facilities should do, it should be noted first of all that:

- (1) no two airports are alike;
- (2) a number of statistics regarding airports and their facilities are often quoted by persons, which statistics are

meaningless in themselves, as for example, the acreage of an airport site; and

- (3) a solution for one airport site may be, and probably will be, impractical at another site.

Second, because historically all forecasts of demand for air transportation have been too low, if one is going to build a new airport facility, one will end up either overbuilding or underbuilding, because it is impossible to forecast exactly the demand that far in the future even though such forecasting is mandatory.

Some of the risks in over-forecasting are: (1) that something may be built which is not needed immediately, or (2) if needed but overbuilt, the money expended to the extent of such overbuilding is wasted in the short range.

Some of the risks of under-forecasting are: (1) an essential airport facility may not be available at the time it is required, and (2) it may not be possible to build such airport facility at all or where it ought to be, if delayed.

Third, there are many airports in the United States and Europe which cannot now be enlarged or expanded because it is not now possible to enlarge or expand one or more of the essential components of an airport system, (all of which are interrelated and inseparable) for example, (1) access, (2) airspace, (3) terminal facilities, and (4) runways.

C. MALTON

1. In relation to the question of whether or not there is a need for a new international airport to serve the central Ontario market, Toronto International Airport, Malton, cannot be reconfigured or expanded within its present boundaries to meet the forecast demands, which the Commission has accepted will take place, for the reasons stated in Chapter IV.

2. Malton could be expanded to meet such forecast demands by forcefully acquiring, for noise abatement, access, runway and terminal facilities purposes, several thousands of acres of land on which are presently located, houses, apartments, and industrial and commercial premises. The acquisition costs to the Government of Canada, the economic loss to the industries and commercial establishments in the area and to the surrounding community, the loss of jobs and the social costs which would result, would be of

tremendous size, as is evidenced by the experience at Los Angeles. Such, if done, might not solve the problems of Malton, and the costs would probably far exceed the costs of establishing a second new international airport.

D. THE PROPOSED SITE NEAR PICKERING

1. The decision confirmed January 30, 1973, as to the need for a second international airport to serve the central Ontario market was the correct decision.

2. After carefully considering and weighing all the New evidence, the Commission concludes that there was no probative New evidence that the site near Pickering was not suitable for such second international airport.

E. SOME OF THE VIEWS OF THE COMMISSION BY TOPICS

1. Forecasts

The Commission accepts the probable forecasts of the Ministry of Transport, Canada, for passengers, air cargo and aircraft movements.

2. Noise Disturbance from Airport Operation

(a) The problem of noise disturbance associated with aircraft operations is not going to disappear. There may well be fluctuations in the level of such noise from time to time, but any reduction will be offset by the noise generated by an increase in aircraft movements and, to a lesser degree, by less tolerance by individuals as result of changes in personal life styles.

(b) Any reconfiguration of Malton will not only not decrease the noise level but will in fact increase it.

(c) By correctly planning and building a new airport at a site near Pickering, it is possible to achieve an accommodation between such an airport and the neighbouring community.

3. Airport Facilities at Malton

Malton cannot be expanded or reconfigured within its present boundaries for most of the period under consideration having regard to ground access, runway capacity

and terminal capacity even to meet the lowest demand forecast prepared by those who attacked the forecasts of the Ministry of Transport, Canada, as being excessive, erroneous and misleading.

4. Ground Access to Airports

- (a) Adequate access is an integral and inseparable component of any airport system.
- (b) Therefore, before the proposed airport facilities at the site near Pickering are opened to the public, it is essential that the access to such must be operational.
- (c) To create an operational access to such airport, planning and construction must be undertaken immediately.
- (d) The planning and construction of such access must be based on proven current technology, but fundamentally on a highway system.

5. Runway Capacity

- (a) A new runway for independent operations must be constructed at Malton to meet the demand until a second international airport is built.
- (b) Until then, this will cause an increase in noise disturbance in the communities around Malton, but cannot be avoided.
- (c) The establishment of dual lane parallel runways at Malton would provide no solution to the present problems.

6. Airspace

There is sufficient airspace above Malton and proposed Pickering, and from the point of view of airspace, both airports could be operated without any conflict between them.

7. Environmental Aspects

- (a) The environmental aspects of the site near Pickering can be protected by the careful planning and execution of the construction of the airport facilities.
- (b) Agricultural production on the site can continue on approximately 12,000 acres of the site.
- (c) There are many examples of agricultural production on airport sites in Canada, the United States and

Europe at the present time. Such agricultural production is compatible with airport operations.

- (d) Agricultural production on the proposed site has decreased in recent years, prior to its expropriation, and can be increased materially and compatibly with the use of the land as an airport.
- (e) There are a number of structures on the proposed airport site which are considered to be of historical or architectural significance. These structures should be preserved and could be moved and grouped together in the small hamlets which surround the proposed airport and on the airport site itself, and be actively used for residential and commercial purposes.

8. Economic Impact

- (a) It is essential to the strong economic base of the Province of Ontario that it possess an adequate air transportation system.
- (b) Such an economic base requires the construction of a second international airport.
- (c) Building such an airport at the site near Pickering will assist in implementing the design of the Province of Ontario for the Toronto-Centred Region.
- (d) The building of the airport at Pickering will have a beneficial economic impact on the region.

9. Energy Crisis

- (a) Air transportation is one of the most efficient ways, from an energy point of view, of moving people and certain goods over long distances.
- (b) Governments are likely to give jet fuel production a high priority.
- (c) In any event, the day to day adequacy of the supply of energy cannot form the basis of the planning necessary to meet the demand for air transportation in the future.
- (d) Major price increases probably are over for crude oil and from here on, its cost will adjust itself in parallel with the cost of other competing sources of energy.
- (e) In any event, the cost of the energy portion of air

transportation in relation to total costs is a small proportion of the total cost of air transportation.

10. Air Cargo

- (a) The potential for air cargo movement in Canada has not been fully exploited, and therefore, it could be a major error to under estimate such market.
- (b) The forecasts for increased cargo movements as projected by the Ministry of Transport, Canada, are probable, and should be used for planning purposes.

11. New Technology

- (a) There is no new technology in the foreseeable future which would affect any decisions made by the Government of Canada January 30, 1973.
- (b) It is improbable that existing jets will be required to comply with FAR Part 36. It is more probable that older noisier planes will be phased out for economic reasons.
- (c) It is improbable that any noise abatement modifications to jet aircraft engines, if made, (retrofitting and refanning) will lessen appreciably the noise disturbance (except temporarily) at Toronto International Airport, Malton, and in any event, will be offset in the long run by noise generated by the increased volume of aircraft movements.

12. Travel Habits

The travel habits following the introduction of the jet aircraft are irreversible and the propensity to travel will probably continue to grow.

13. General Aviation

- (a) General aviation is an essential service, and an important part of the central Ontario air transportation system.
- (b) The Government of Canada has not sufficiently encouraged general aviation.
- (c) General aviation must be coordinated and integrated into the air transportation system.

14. STOL

- (a) The short take-off and landing aircraft provides no

solution to meeting the forecast demands for passenger air transportation nor an answer to solving noise disturbance from aircraft operation.

- (b) It has an important part to play in providing air transportation service to remote areas; as a feeder service to major airports and short distance inter-urban trips.

15. Two-Airport System

A two-airport system is not only commonplace in the United States and Europe to-day, but will, out of necessity, become the norm for all major metropolitan areas in the next decade. Multi-airport systems will also become commonplace.

16. The Role of the Proposed Pickering Airport

- (a) Pickering, if built, should be an international airport.
- (b) The airport should not be opened until all the necessary facilities, and in particular, ground access, are operational.
- (c) Provision for a STOL feeder operation should be incorporated.
- (d) Facilities should be provided for such general aviation aircraft which require facilities which are only offered at a major airport.
- (e) The proposed Pickering airport should be a part of an integrated air transportation system for the central Ontario market operated under the direction and control of an Airport Authority.
- (f) Such an Airport Authority must determine which air carrier operates from which airport and in which particular flight sector.
- (g) Such an airport should be designed and constructed for the convenience of air passengers and not the air carriers.
- (h) The air transportation system, including the proposed Pickering airport, should be self-supporting.
- (i) The proposed Pickering airport in the proposed system, if built, should be developed so as to afford the maximum convenience to the passenger.

17. Off-Site Terminals

- (a) Off-site terminals will not do anything to meet the need for increased capacity at the airport site.
- (b) Public bus collection locations for air passengers should be established in areas where the market exists, at which locations parking lots should be established for private cars.

18. Airport Zoning and Compensation

Legislative policy in respect to airport zoning and compensation should be reviewed and changed so as to make airports (along with other uses affected by other zoning) compatible in the surrounding community.

19. An Airport and Its Planning

- (a) Airports must be, and can be, planned and built to establish an accommodation with the community in which they are located and should be planned and built primarily for the convenience of the public.
- (b) The lead time for construction of a new airport can vary from 6 to 10 years, therefore, in the case of Pickering, time is of the essence.

20. An Airport Authority

An Airport Authority should be established to operate and coordinate all activities of the air transportation system in the central Ontario market.

APPENDIX 1

P.C. 1973-3026
5 October, 1973



PRIVY COUNCIL • CONSEIL PRIVÉ

WHEREAS the Government of Canada has decided that Toronto International Airport, Malton, will not be expanded beyond its present boundaries in order not to further increase the degree of disturbance from flight operations to the people now living in communities surrounding Toronto International Airport, Malton;

AND WHEREAS the Government of Canada has decided that the air transportation needs of the central Ontario market require that there be established another international airport in addition to Toronto International Airport, Malton;

AND WHEREAS the Government of Canada has chosen a site near Pickering, Ontario to be the location for the new International Airport;

AND WHEREAS it is desired to provide a means of receiving new evidence as to the need for and location of such an airport and new evidence of any relevant factor that has not been considered by the Government of Canada, if available and forthcoming;

AND WHEREAS there are other matters necessarily inter-related to and affected by such decisions in respect of which it is desired that there be an inquiry.

THEREFORE, THE COMMITTEE OF THE PRIVY COUNCIL advise that, pursuant to Part I of the Inquiries Act, the Honourable Mr. Justice Hugh F. Gibson, a Judge of the Federal Court of Canada, of the City of Ottawa in the Province of Ontario, Murray V. Jones, Esquire, of the City of Toronto in the Province of Ontario, and Dr. Howard Petch, Esquire, of the City of Kitchener in

the Province of Ontario, be appointed Commissioners under Part I of the Inquiries Act (to be known as the "Airport Inquiry Commission") to inquire into and report upon the air transportation needs of the central Ontario market as follows:

1. In relation to the decisions that there is a need for a new International Airport for the central Ontario market and that the new International Airport be located on the site near Pickering, Ontario, to receive and record new evidence, if available, and if available and adduced, to report on such new evidence in response to the following questions:
 - (a) respecting need,
 - (i) is there any new evidence as to what is the expected maximum passenger traffic volume in the domestic, trans-border and international air traffic markets for the year 1980 and what are the best estimates of rates of growth beyond 1980, and
 - (ii) is there any new evidence that Toronto International Airport, Malton, can be expanded or reconfigured, within present boundaries, to meet all reasonable needs, having regard to runway capacity, ground access, terminal capacity and the number of people affected by disturbance from flight operations for the period up to 1980, 1990 and 2000;
 - (b) respecting location,

is there any new evidence to prove that the site near Pickering, Ontario is not suitable for the new International Airport for the central Ontario market having regard to

 - (i) disturbance from flight operations,
 - (ii) passenger convenience,
 - (iii) regional economic effect,
 - (iv) total environmental effect, positive and negative, and
 - (v) facilities required, including related infrastructures such as roads, railways, guideways and helicopter facilities, and
 - (c) generally, is there any new evidence of any relevant factor that has not been considered by the Government of Canada, such, for example, as established facts on technology or travel

- habits, that may appear to affect any decision of the Government of Canada taken to date?
2. To receive and report on any evidence adduced and, if deemed advisable, to make recommendations in so far as they are within federal legislative jurisdiction in response to the following questions:
 - (a) should the new International Airport be principally international in character or should it serve some other function,
 - (b) what airline traffic sectors or parts thereof should be allocated to the new International Airport in the major first phase in order to relieve the disturbance caused by flight operations at Malton,
 - (c) to what extent should domestic and United States traffic be served at the new International Airport in addition to the airport having an international role,
 - (d) should the opening date of the major first phase be 1980 or later,
 - (e) should there be a partial or limited opening of the new International Airport prior to 1980,
 - (f) what should be the nature of
 - (i) the ground access to the new International Airport, and
 - (ii) the inter-airport transportation between Toronto International Airport, Malton, and the new International Airport, and
 - (g) from the point of view of passenger convenience, should a downtown terminal or terminals be established in respect of Toronto International Airport, Malton or the new International Airport?
 3. For the purpose of reporting under subparagraphs 1(a), (b) and (c), to receive new evidence, if any is forthcoming and adduced in accordance with the practices and procedures of the Commission, from any private member of the public, any interested agency, any group or corporation and any representative of the federal or any provincial, regional or municipal government who desires to give evidence.
 4. For the purpose of reporting and if deemed advisable making recommendations under paragraph 2, to receive evidence, if forthcoming and adduced in accordance with the practices

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and procedures of the Commission, from any private member of the public, any interested agency, any group or corporation and any representative of the federal or any provincial, regional or municipal government who desires to give evidence.

THE COMMITTEE further advise that

- A. the Honourable Mr. Justice Hugh F. Gibson be appointed Chairman of the Airport Inquiry Commission;
- B. the Chairman be authorized to prescribe and adopt such practices and procedures for all purposes of the Commission as he may from time to time deem expedient for the proper conduct of the inquiry and to vary those practices and procedures from time to time;
- C. the Commissioners be authorized to sit at such times and at such places and to view such other locations as the Chairman may from time to time decide;
- D. the Commissioners be authorized to engage the services of such accountants, engineers, technical advisers or other experts, clerks, reporters and assistants as they deem necessary or advisable, and also the services of counsel to aid and assist the Commissioners in the inquiry, at such rates of remuneration and reimbursement as may be approved by the Treasury Board;
- E. the Commissioners be authorized to rent such space for offices and hearing rooms as they deem necessary or advisable at such rental rates as may be approved by the Treasury Board; and
- F. the Commissioners be authorized to submit interim reports to the Governor in Council from time to time and be requested to submit a final report to the Governor in Council with all reasonable despatch, if possible within twelve months.

THE COMMITTEE further advise that, pursuant to section 37 of the Judges Act, the Honourable Mr. Justice Hugh F. Gibson be authorized to act as Commissioner for the purposes of the said inquiry.

CERTIFIED TO BE A TRUE COPY – COPIE CERTIFIÉE CONFORME

“R. G. ROBERTSON”

CLERK OF THE PRIVY COUNCIL LE GREFFIER DU CONSEIL PRIVÉ