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TITLE: FUTURE OF MINING IN THE YUKON

Mr. Chairman:

The economic development of the mineral resources of the northern 2/3 of Canada is the key to the stable expansion of this part of Canada's economy. This fact is true of the Yukon Territory as it is of the other territories and districts north of the 60th parallel of latitude.

In the Yukon, renewable resources represented by fish and fur are not exploited to any degree. Preliminary studies suggest commercial fishing is not feasible and published economic reports predict a decline in the fur trapping industry. Detailed studies of forest reserves of the territory have not been published; there are apparently stands of timber suitable for pulp, but to date no large scale attempt has been made to mine and market this resource. It is, therefore, obvious that the development of the mineral resources of the Yukon will spell out the economy, at least in the immediate future.

The gift of prophecy would be a handy talent at this point, but since it is not available, it might be wise to review the development of the mineral industry during the past ten years. Based on this review, it may be possible to forecast to some extent conditions that will determine the future of the mining industry. The operating industry can be summarized briefly as follows: figures, while not exact, will serve to illustrate its size. Slightly more that 2.5 millions of dollars of gold have been mined, annually, during this period, principally from tributaries of the Yukon in the vicinity of the Klondike River. There is a small but vigorous placer mining operation in the Mayo Mining Division and an erratic production of placer gold in the Kluane Range in the Whitehorse Mining Division. During this decade, silver, lead, zinc and cadmium have been mined by one major company and in a number of smaller but successful operations. The base-metal production of the Territory has averaged just over 10 millions of dollars annually. The total mineral production at the end of this period approached 12.5 millions of dollars. As an indication of the youthfulness of this industry, it represents less than ½ of 1 percent of the annual mineral production of Canada.

Now, apart from fluctuating market prices for the metals, which more than anything else control the growth of such an industry, the problem of costs of mining, in the Yukon, which is a special study, should be considered since it is only in the area of costs that co-operation between labour, management and government can effect any form of assistance to growth. Cost studies of individual mines have shown, that due to location in the Territories, any mineral deposit must support a larger capital cost and a larger operating cost than a comparable deposit located in those parts of the Dominion where power development, transportation and service industries benefit from an integrated economy.

Cost figures may not be too accurate since insufficient case histories have been studied however, these studies indicate that per ton of ore mined, capital costs and the costs of maintaining inventories will be higher by approximately two dollars: the cost of services to employees such as housing and recreation facilities will be higher by one dollar and seventy-five cents per ton: the costs of energy to mine will be greater by from one dollar to two dollars and twenty-five cents per ton and the additional charge for transporting concentrates to railhead of tidewater ports will be greater by from four to five dollars per ton. Of this total additional charge, taken as nine dollars and eighty-five cents, for a mean average, the additional cost due to location for energy

and transportation amounts to 59%.

In terms of mineral in place as a base metal, this increment absorbs the market value of between 1.5 and 2.0% of the copper in a sulphide deposit, between 4 and 5% of the market value of a lead or zinc sulphide deposit, or approximately 11 ounces of a silver deposit in a sulphide association. This means that if a sulphide copper deposit can be mined profitably at 2% in the more developed regions of Canada, a deposit similar in size in the Territory, will be uneconomic at less than 3.5%.

It is apparent that the development of any form of transportation that will provide haulage to railhead at substantially less than seven cents per ton-mile, or the development of any form of energy delivered to the mining site for a figure less than 2.5 cents per KW-HR, both of which are present charges, will materially affect the classification of mineral at producing mines and potential producers.

A review of the search for new mineral deposits during the last ten years will reveal that it has resulted in finding oil following a well organized exploration programme and the locating of nine potential mineral deposits, all of which warranted surface or underground development. As an indication of the intensity of exploration effort, at the present time, six of the nine finds were made prior to 1956 and the only discoveries of the past three years that have undergone any extensive development programmes are the scheelite deposit on the Yukon-NWT boundary, the gold and base-metal prospects in the Ketza River area and the copper deposit at Kathleen Lake.

(May I have the map of the Yukon Territory, please?)

This is railhead at Whitehorse for mineral deposits tributary to that point. Haines and Skagway Alaska are tidewater points enroute to market. The Alaska Highway, the Whitehorse-Keno access route, and the Stewart River - Dawson - Tok Junction Road, the Johnson Crossing - Ross River access roads are tributary roads connecting with the Alaska Highway. These routes are some of the proposed access routes under construction in the territory.

It is, of course, not possible to predict how many of the finds discovered in these ten years would be brought into production if transportation costs and energy costs were to be reduced substantially, but it is likely that the owners would review the estimated operating cost of their product and the market possibilities.

I note, too, a change in trend of the selection of areas of prospecting the territory. Where, ten years ago, the search was widespread throughout the southern Yukon with little consideration being given to the availability of existing or proposed transportation routes, the field of search during the latter years under review, has been concentrated around existing roads or areas where new roads have been built or, rebuilt or proposed. I also note that the independent prospector is not as active and that saturation prospecting by exploration companies in a given area is becoming more common than the practice of spreading their efforts thinly over the territory. The helicopter has become the close support vehicle for such programmes and has probably dictated, to some extent, the change in programming of a season's field effort.

Curiously, while the numbers of prospectors, engaged in search for minerals has decreased, the numbers of field engineers, operating independently or with one assistant has increased. In 1959 some 21 exploration companies maintained field engineers in the territory, although only seven companies maintained teams of prospectors in the field.

Just as the economy of the Yukon Territory is markedly affected and influenced by the government non-profit spending, so too, there has

been a notable affect on the mining and prospecting industry by this influence. The standard of the existing roads has been steadily improved: three bridges have been constructed on the Whitehorse to Mayo and Dawson route, two of them being completed this year. Aids to prospectors have been introduced: in the form of support for assaying of samples; and, I understand, that grub-stakes to individual prospectors are under study. Financial support has been given to a Chamber of Mines with a grant of $5,000, which grant was the subject of some discussion, before it was delivered. The Federal Government's controversial roads to resources programme has been implemented with the start of two new access roads, one into the oil search area north of the Ogilvie River and the other a road following the route of the extension of the Rocky Mountain Trench commencing at Watson Lake on the B.C. border. Fifty miles of usable road have been completed on each of these routes. The southwestern end of the Canol road, built during the second World War, has been rehabilitated as part of this programme and is open to all types of wheel traffic except in the period of heavy snowfall. Besides implementing the construction of these new access routes and raising the standards of existing routes, a third type of access road is under study by the department concerned. This road is designed as a feeder route to existing roads for summer use to provide access for fire control, sport, fishing and prospecting. In addition to these two types of road programme, direct assistance to provide access to mineral properties undergoing an organized programme of examination and testing is under concentrated study and a decision on this type of assistance is due to be announced shortly.

Mapping by the Canadian Geological Survey in the territory has been continuously conducted through the past ten years, although the numbers of field parties has been reduced. A resident geologist and an efficient map service has been established at Whitehorse. Detailed geological surveys of areas on a one mile basis are not being done although recently completed four mile mapping has indicated such an aid to prospecting is desirable. There is no practical geological service by government to prospectors in the field, such as is provided in the provinces by the Department of Mines, and there is a distinct need for this type of assistance. Airborne geophysical surveys have not been implemented in the Territory, nor, so far as I am aware, have any tests been conducted to determine whether these are feasible as aids to the finding of mineral deposits. In considering the degree of government aid to the search for minerals in this territory, and bearing in mind that the potential mineral resources are largely not known or indicated to this date, the rate of geological mapping programme and other aids, appears to be rather inconsistent with an accelerated programme of road construction, improvements to airfields and communication. Land communications, considered as an aid to the mining industry have been improved during the decade with the establishment of telephone lines into Dawson and Mayo and the construction of a micro-wave communication system following the route of the Alaska Highway. Commercial radio communication, one of the most vital to the search for minerals, has not been improved although one temporary weather reporting station has been established at Chapman Lake to assist aircraft travel north of Dawson. The administering of the rules connected with mining and prospecting in the Yukon, as you probably know, is governed by an Act of Parliament, and there have been very few changes in the act other than interpretation of confusing sections. Exploration for oil and gas is governed by regulations and recent changes and proposed amendments governing ownership and financing are under study by the companies concerned. At present, both of the oil drilling operations have been suspended. The amendments recently proposed to the Northwest Territories Quartz Mining Regulations are being watched with interest by prospectors and exploration companies engaged in exploration in the Yukon. To date, there has been no indication that any similar changes are contemplated for the Yukon Act.

From a study of the last ten years of the Mining Industry in the Yukon Territory, it would appear that the following factors will, to a marked degree, assist in the development of known mineral deposits and will make more probable the incidence of new mineral finds:

(1) The continued improvement of existing transportation arteries with the specific object of providing access from favorable areas for mineralization to tidewater ports or railhead. The bulk haul rate on surface is seven to ten cents per ton-mile: a more equitable figure would be two to four cents per ton-mile.

(2) The development of energy delivered to market at approximately one cent per KW-hr on long term contracts. The existing rates vary from 2.5 to 4 cents per KW-hr and can only be described as experimental. There are two small government developed hydro-power plants in the Yukon.

(3) An integrated development of secondary roads in key-selected areas to provide seasonal access for prospecting in conjunction with, or preceded by basic geological mapping of the key areas.

(4) Some form of assistance to the prospector, financial or otherwise, that will encourage the independent prospector to resume prospecting should be tested and if the results are favourable, this programme should be established on a continuing basis.

(5) The establishment or budget financing for the resident geologist should provide for transportation to such an extent that his services are available to the prospector, when requested, on the working sites during the prospecting season. The existing budget for the resident geologist at present does not provide that service.

(6) A thorough investigation of the feasibility of airborne geophysics and the establishment of a programme of coverage of the Territory at a rate consistent with the size of the Territory which is 200,000 miles.

(7) The establishment of a usable practical radio-communication net available on a commercial basis to exploration companies working in areas beyond the reach of land telephone lines.

(8) Coupled with the above system, there should be established in eastern and northern Yukon a series of weather-reporting stations manned on a seasonal basis during the prospecting season.

(9) There is need for the study and implementation of a schedule of tax remissions and depletion allowances to balance at least part of the increment cost of mining a deposit due to its location north of, and distant from, established transportation services to the world markets.

It would be difficult to justify economically a railroad capable of servicing adequately the 14,000 residents of this Territory and the industry established to date. Until resource development has approached the point where the meaning of the term back-haul has reversed its geographical poles, some form of relief from the excessive charge for development and mining is both desirable and necessary if venture capital from private sources is expected to continue to search for and develop new mines.

Venture capital, regardless of its source, will be attracted to an area where a stable and workable system of rules specifying the equity of the prospector or exploration company has been spelled out. Mineral deposits so found will be developed into producing mines if the various government agencies programme the development of public services such as communication, transportation and energy resources to match the valid needs of industry. A sustained search for new deposits will be maintained if the estimated financial return is consistent with the degree of risk involved in the search.

I believe that during the next ten years the search for and development of mines in the Yukon Territory will go forward, but the rate of development of this relatively young industry will depend on the degree of efficient co-operation and co-ordination between private industry and public servants, both elected and appointed, who are responsible for developing services to industry in an area where such services are so vital.