105

REVIEW REPORT ON THE GEOLOGY AND ORE RESERVES OF THE

007546

PESO SILVER MINES LTD. PROPERTIES

YUKON TERRITORY

NOVEMBER 10, 1965

DOUGLAS D. CAMPBELL CONSULTANT VANCOUVER, CANADA

PESO SILVER MINES LTD.
PROPERTIES
YUKON TERRITORY

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SUMMARY

The purpose of this report is to summarize all of the pertinent information regarding the properties and interests owned and held by Peso Silver Mines Ltd. in the Yukon Territory, Canada. Because these holdings are many, widespread and diverse in their development and potential the compilation of the significant data for them all must necessarily involve some abbreviation of material to render the presentation manageable. For this reason it has become a matter of personal judgement to decide on how much of the available data should go into this report to provide verification for the conclusions presented by the writer. No doubt some readers will wish further detailed documentation. In the case of most of the properties such documents are available and can be examined through the courtesy of Peso Silver Mines Ltd.

All of the Peso holdings are referred to in this report but emphasis has been put only on those properties whose development has proceeded to a sufficient stage to indicate their possible production potentials. Such properties are located in two principal areas of the Yukon; the Mount Nansen area, 120 miles northwest of Whitehorse, and the Mayo area, 220 miles north of Whitehorse. The geology and development for all of the properties with immediate potential are described in reasonable detail and their economic worth is derived and presented both as individuals and in context with the other properties in each area. In addition, at the beginning of this report a brief report presents the basis for the estimate of operating costs in the Yukon, a vital factor when considering the Peso properties. Considering known costs, costs of similar operations, mill recovery results, etc. it is evident that a total cost in both the Mayo and the Mount Nansen area will be around $25 per ton of ore, with a fair chance in both places of reducing that figure to $20 per ton.

MOUNT NANSEN AREA

A review of the geology and development of the Webber, the Huestis and the Brown-McDade mines at Mount Nansen indicates that a reserve of gold-silver ore has been established as proven-probable and well indicated as follows:

152,300 tons @ 0.46 oz./t. gold and **16.8** oz./t. silver

The gross value of this ore at present metal prices is $40.50/ton. This value does not consider the marketing of 1-2% lead whose worth approximately balances the mill loss of the gold-silver.

To this total should be added indicated but as yet imperfectly developed ore at Brown-McDade amounting to:

77,945 tons.

Thus the Mount Nansen properties have **230,000 tons** of reasonably assured ore with a net profit potential of about $15 per ton or better.

The ore potential of the properties is discussed and a reasonable potential of fairly readily developed ore is estimated to be **3,000,000 tons** with ample scope for more exploration and development.

RECOMMENDATIONS: from the foregoing information it has been concluded that a development program oriented toward production is warranted at Mount Nansen and, pending results, the construction of a mill should be planned. Once production has begun further exploration and development should be pursued to establish future reserves and continue to probe the excellent indicated potential of the property.

The cash flow for such an operation at Mount Nansen is estimated to be as follows:

Immediate development and exploration	$1,000,000
Mill, plant and townsite (200 t/d.)	1,000,000
Post production development	800,000
	$2,800,000 (Can.)
Estimated annual net profit	$1,000,000

There is a very good possibility that the initial development program will indicate sufficient reserves to support a 400-500 t./d. mill, thus doubling the earning power of the operation. It is early yet to estimate an ultimate life for the operation but geological conditions suggest that a life of 10-20 years is very much in order.

MAYO AREA:

A review of the geology and development, some in detail and others in general, of the Peso Silver Mines properties in the Mayo district is presented and indicates that two properties have the following proven and well indicated silver-lead-zinc ore reserves:

Peso Rex	154,000 tons @	20.9 oz./t. silver and 3.7% lead
Rio Plata	44,000 tons @	16 oz./t. silver, 6.9% lead and 10.7% zinc.
Total	194,000 tons	

Considerable confirmatory development work is required on these properties but it is evident that **200,000 tons** of ore with an average gross value of at least $40 per ton is strongly indicated. The potential of both of these properties, plus others in the area which have not been fully developed, indicates that a common mill serving all properties could probably operate economically at 100-300 tons per day for 10 years or more and realize a profit of about $15 per ton.

RECOMMENDATIONS: from the above information it has been concluded that development programs toward production are presently warranted at Peso Rex and Rio Plata and, pending results, a mill should be considered for the Mayo area. Development of these properties can proceed, along with exploration and development of the other Peso holdings, once production has begun from the Peso Rex and the Rio Plata.

An estimated cash flow for the Mayo operation is as follows:

Initial confirmatory development	$ 800,000
Mill, plants, etc, plus post-production development	2,200,000
	$3,000,000 (Can.)

The estimated annual profit for such an operation would be approximately $1 million per year.

The difference between the Mayo operation and that at Mount Nansen is essentially that enough ore is well enough proven at Mount Nansen to guarantee profitable production now; whereas at Mayo considerably more development work is necessary to confirm the estimated reserves which are necessary to guarantee production. Also, costs, etc. are better established at Mount Nansen and the profit potential is more assured than at Mayo at this time.

Basing his judgement on the results of the research that went into the compilation of this report, plus his detailed knowledge of most of the properties involved, the writer is confident in recommending to Peso Silver Mines Ltd. that the Mount Nansen operation should now be directed toward production and that further development be pursued at the Mayo properties to enable a production decision to be made there as well.

Respectfully submitted,

Douglas D Campbell

Douglas D. Campbell, P.Eng., PhD.

INTRODUCTION

1. Peso Silver Mines Ltd., properties.
2. Mining Costs in the Yukon.

INTRODUCTION

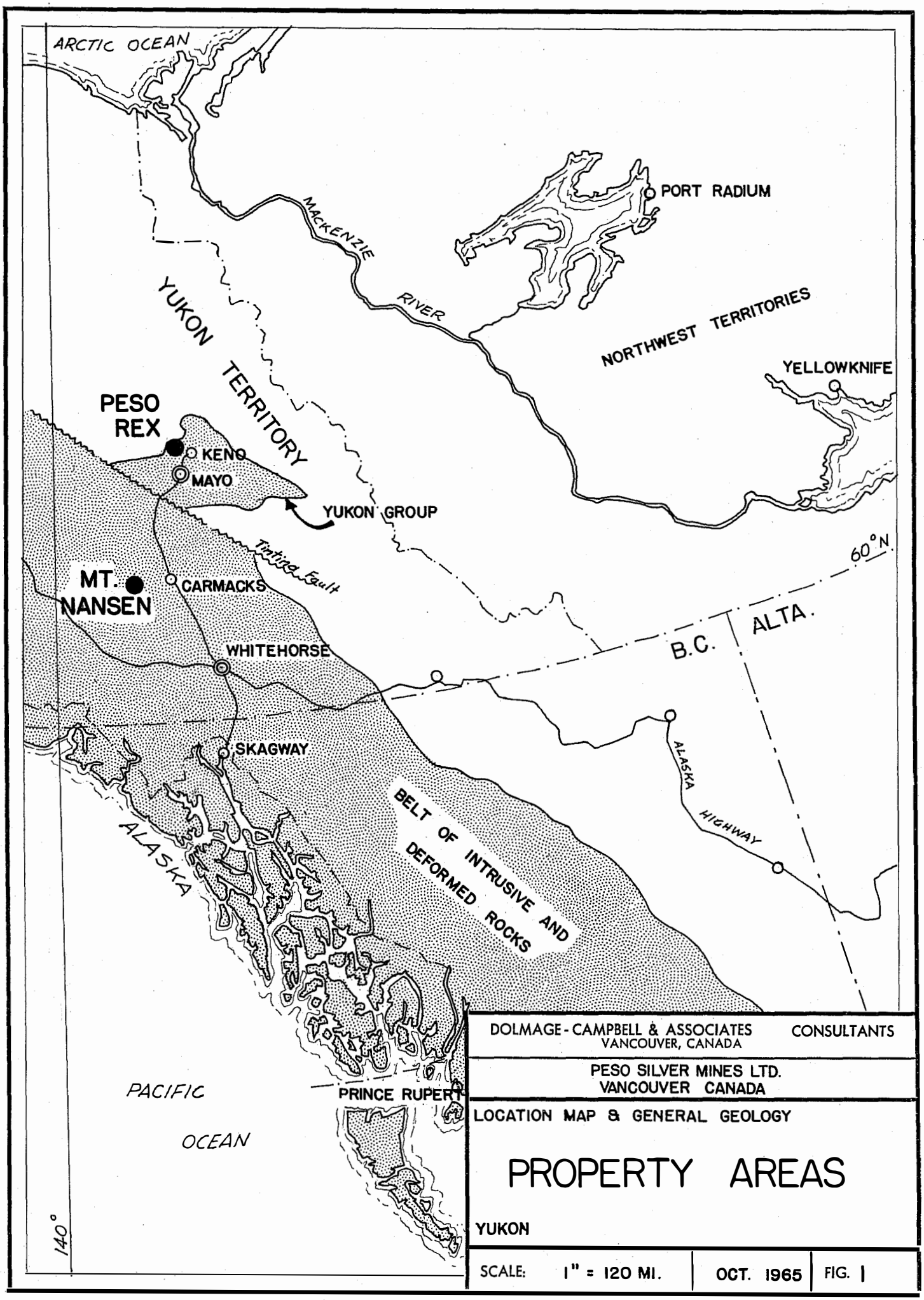
The principal holdings of Peso Silver Mines Ltd., are located in two widely separated regions in the Yukon Territory, the Mayo District near the central part of the territory, and the Mount Nansen area 130 miles to the south-southeast. The Mayo area is reached from Whitehorse by an all weather unpaved highway, a distance of about 250 miles. The Mount Nansen area is reached by the same highway as far as Carmacks, 100 miles north of Whitehorse, and from there via a winter tote road for a distance of about 40 miles to the west. From Whitehorse travel to southern Canada is by daily air service to Vancouver, by railway to Skagway on the Alaskan Coast and thence by ship to Vancouver, and by truck or car down the Alaska Highway to Edmonton or Vancouver.

The Mayo District is relatively well known because it includes the lead-silver deposits of Keno Hill and Galena Hill, which are being mined by United Keno Hill Mines Ltd. and which comprise one of the richest and most productive silver districts in the world. Until this year United Keno Hill was the only non-placer mine of any consequence in the Yukon; however, at the present time an unprecedented surge of mineral exploration is taking place in the Yukon. Modern exploration techniques, knowledge and equipment are disclosing economic deposits at a rate heretofore not experienced in the Yukon. Not only are helicopters providing ready access to regions otherwise isolated by muskeg but geophysical and geochemical surveys are also detecting targets beneath perma-frost cover that can now be probed either by bulldozers or a wide variety of drilling techniques not available five years ago. In 1965 the La forma Mine, Discovery Mines Ltd., located about ten miles north of the Peso Silver Mines Ltd. property at Mount Nansen, came into production as a gold mine. In 1966-67 the copper deposits near Whitehorse will be brought into production at 1000-2000 tons per day by New Imperial Mines Ltd. Also, Arctic Mines Ltd. are developing an encouraging gold-silver deposit at Carcross near the B.C. border. Numerous large-lead-zinc-silver deposits are presently being vigorously explored and developed near Vangorda Creek, 100 miles east of Carmacks, by Kerr Addison Mines Ltd., Cyprus Mining Corp. and Dynasty Explorations Ltd. It is evident that one or more new mines will reach production in the Yukon annually for the next 3-5 years at least.

The properties of Peso Silver Mines Ltd. in the Mount Nansen district are all centered around a number of major gold-silver bearing vein zones three of which have been extensively developed by surface drilling and stripping as well as by underground drifting on one level each. These three deposits are: The Webber, the Huestis and the Brown-McDade. Considering the amount of development done to date, large tonnages of profitable gold-silver ore have been proven on all of these deposits with the limits along strike and depth still not reached. Similarly, the potentials of other known vein zones in the area have not been probed. The area now has sufficient indicated ore to profitably support a small to modest size mill, continued development will in all probability extend these reserves sufficiently to make a larger mill worthwhile.

The Peso Silver Mines Ltd. properties in the Mayo area consist of many claim groups in which Peso holds total or partial interest. Underground work has been done on six of these properties, the principal one of which is Peso Rex. At Peso Rex two adits on separate vein zones, plus surface work, have indicated sufficient ore reserves to encourage further development. If the Rio Plata and other properties in the area are considered with the Rex there is probably sufficient ore amongst them all to profitably support a small custom mill at this time.

AFFIDAVIT: The writer was engaged as consulting geological engineer by Peso Silver Mines Ltd. in August, 1964, and since that time has visited most of the Peso properties in the Mayo area and directed the development of the properties in the Mount Nansen area. This summary report has been compiled from the writer's observations together with the data supplied from the numerous engineers, geologists and consultants engaged by Peso Silver Mines Ltd. prior to and during the writer's tenure with the company. In the cimpilation of this report just enough detail has been included to verify the conclusions as much as deemed necessary. The reader will realize on reading this report that a very great amount of data, principally geological and assay plans etc., has been omitted from the report in order that it not become overly cumbersome. The reader is therefore assured that all such detailed plans and records are available from Peso Silver Mines Ltd. to supplement this report and provide verification for the conclusions presented here by the writer.



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PESO SILVER MINES LTD.
VANCOUVER CANADA

LOCATION MAP & GENERAL GEOLOGY

PROPERTY AREAS

YUKON

SCALE: 1" = 120 MI.	OCT. 1965	FIG. 1

MINING COSTS IN THE YUKON

Consideration of any mining venture in the Yukon Territory, Canada, inevitably encounters the severe critique that operating costs in the Yukon are inordinately high because of high labour, transportation and energy costs, and that operating in a permafrost area adds another cost burden. Also comparisons are invariably made to the high costs of United Keno Hill Mines Ltd., until this year the only operator in the Yukon. This approach is so replete with misconceptions and mistakes that, if accepted, would negate the operation in the Yukon of any mine but one with grades like United Keno Hill. This is patently not the case but it deserves elaboration and explanation in order that the reader will be able to assess the data presented in the body of this report in proper perspective. For this reason the following paragraphs present information employed to estimate mining costs in the Yukon.

GENERAL MISCONCEPTIONS: Wages in the Yukon are not extremely high and are no higher than those in other parts of northern Canada from Labrador to northern British Columbia. Generally speaking, mine wage scales are the same throughout northern Canada, with concessions made through fringe benefits and bonuses in particularly isolated camps. Likewise, general operating costs in the Yukon are not significantly higher from those in any other part of northern Canada, wherein there are dozens of profitable operating mines. There is one added burden in costs in the Yukon in the high transportation charges imposed by the White Pass and Yukon Railway to Skagway. These costs can be circumvented to a certain extent by the use of contract trucking on the Alaska Highway but in the near future the Cassiar-Stewart highway will be completed to connect Whitehorse with a seaport via good road. When this is accomplished, (it is presently about 75% completed), transportation costs out of the Yukon will drop appreciably. Transportation costs are not a prohibitive factor at this time for a high grade concentrate shipped from the Yukon via Skagway.

The existence of permafrost in a mine area has no significant effect on costs of any underground mine operation. In some mines in Canada it has even proven to be an advantage in that it provides artificial support to weak rock and seals off workings from water sources that would prove costly to check by conventional means.

The permafrost and climatic conditions in the Yukon have seriously interfered with exploration but not operation. The only reason that there are relatively few mines in the Yukon is because exploration is more difficult and consequently more costly than elsewhere in Canada. The principal reasons for this difficulty is that much of the Yukon has not been glaciated and is thus covered by deeply weathered rock and soil that is now solidly frozen by permafrost. Similarly, those areas that have been glaciated are not much better because the alluvial-glacial deposits are tightly permanently frozen and the bare rock has been reduced to rubble to depths of 20-30 feet by frost action since glaciation. **Finding** mines is difficult and costly in the Yukon, operating them is essentially no different than in any other part of northern Canada.

UNITED KENO HILL MINES: The United Keno Hill operations in the Mayo area comprise the highest unit cost mining operation in Canada and to use this operation as a criteria for estimating the costs of other prospects in the Yukon is unnecessarily severe. Many factors contribute to the high costs at United Keno Hill, two of these are; 1) The operation is mining 500 tons per day from several deposits miles apart. The overhead, extra labour and general inefficiency of maintaining such a surface operation in winter is much higher than that required for a properly integrated underground mining operation. 2) Because the orebodies at Keno are high in galena content and are contained in softly altered and intensely cross-sheared rock the ore and the wall-rock in the stopes is extremely heavy. For this reason 70 percent of the stoping is by square-set methods, the costliest in the industry. Until 1962, when Falconbridge took over all operations of the mine, the early owners had operated Keno Hill as a salvage operation with the minimum of the capital expenditures necessary to make such a diverse operation less costly. For this reason the operation became inefficient, living on a month to month basis with very limited reserves, and survived principally on the very high grade of the ore. During those years the **total** costs at United Keno Hill were $34.83 per ton for heads equivalent to 40 oz. silver per ton.

The mining costs at United Keno Hill, prior to 1962, were $20 per ton of which $4.40 for development and $7.36 was for stoping and timber, relatively very high costs dictated by the unique condition of the Keno orebodies. On top of these costs are

charges of $11 per ton for shipping and smelting concentrate that is largely galena for which until recently there was no margin of profit for shipping as lead but which had to be shipped because it contained the silver. The 1962 milling costs of $4.80 per ton at Keno have been lowered in the last year. In contrast to these conditions at Keno, the Peso ores in the Mayo area have a low galena content and will concentrate to a higher silver content by weight than the Keno ores. The Mount Nansen operation will ship either a high grade gold-silver concentrate and/or bullion for which transportation costs will be relatively low. The milling costs at the Peso operations will be at least as low as those at Keno.

Since 1962 Falconbridge have been making a concerted effort to modernize the mine and eventually to reduce costs. To date they have succeeded in lowering the cut-off grade to 15 oz. Ag per ton (equivalent) or $21 (Can.).

COSTS AT MOUNT NANSEN, Y.T.

The stoping at Mount Nansen will be cut and fill with minor amounts of shrinkage possible in some orebodies. Development costs are relatively cheap per ton of ore because of the close grouping of the orebodies and the ore deposits. Milling, according to metallurgical tests presently being conducted ,will involve cyanidation and flotation. With an all-weather road to Carmacks transportation will be no problem.

Assuming a 250 ton per day operation, the total costs for a Mount Nansen operation are conservatively estimated to be approximately:

Mining	$10.00 per ton
Milling	$ 4.50 per ton
Surface and Transportation	$ 4.50 per ton
Marketing taxes, overhead, etc.	$ 6.00 per ton
Total	$25.00 per ton

With steady operations all of the foregoing figures can no doubt be reduced. It should be possible to eventually reduce mining costs to $5 per ton with a well integrated operation. Similarly, at a production of 500 tons per day unit costs will be appreciably reduced.

COSTS AT MAYO DISTRICT (PESO REX)

The total costs for an operation at Peso Rex were estimated in 1962 by the consulting firm of Dolmage, Mason and Stewart Ltd., Vancouver, Canada, to be $25 per ton. The net change in costs and methods since that estimate have not been significant therefore that estimate is accepted for use in this report.

COSTS OF COMPARABLE OPERATIONS:

To further substantiate the foregoing estimates it is worthwhile to record that the Discovery Mine in the Northwest Territories mines 200 tons per day from gold-quartz orebodies, using cut-and-fill stoping, not significantly dissimilar from the Mount Nansen deposits. The mine is located in the Canadian Shield, farther north than Mount Nansen, and is serviced entirely by air transport except for winter tractor trains from Yellowknife. The total costs for this mine in 1963 were $26.72 per ton. Recently published figures for the first half of 1965 at Discovery indicate that the total costs have been substantially reduced and the operating profit increased. In our opinion this mine is a much more reliable one to use as a cost comparison for both the Mount Nansen and the Peso Mayo deposits than is United Keno Hill.

The LaForma Mine, north of Mount Nansen, is presently being increased in production from 70 to 125 tons per day at a head of 0.85 oz. gold per ton ($31.45 Can. gross).

It is evident from the foregoing examples that total costs of an operation at Mount Nansen and/or at Peso Mayo will be approximately $25 and probably less. It is therefore evident that reserves of $30 per ton ore or better will return an appreciable profit if sufficient tonnage is milled.

PART ONE

Peso Silver Mines Ltd.

MT. NANSEN MINES

Carmacks, Y.T.

INTRODUCTION

The Mount Nansen mining area lies 30 miles due west of the town of Carmacks in South-Central Yukon. An all-weather road has been constructed from Carmacks halfway to the area, the remaining distance is traversed by a winter tote road which is passable by cleat tracked vehicles during the summer months. The area is also reached by either float or wheeled planes from Whitehorse. The mining area within which the Peso Silver Mines Ltd. properties lie is approximately six miles by ten miles in size, trending northwestward between Nansen Creek to the west and Victoria Creek to the east near their head waters.

Property: The entire property at Mount Nansen is covered by four major claim groups which form one contiguous irregular shaped block. Of these groups, Mount Nansen Mines Ltd. owns two groups totalling 269 claims, Central Nansen Mines Ltd. owns one group of 64 claims, and Brown-McDade Mines Ltd. owns one group of 70 claims. All of the development deposits are on the Mount Nansen Mines and Brown-McDade Mines claims.

Peso Silver Mines Ltd. owns the following proportions of the outstanding shares of the above three companies: Mount Nansen Mines Ltd., 55.1%, Central Nansen Mines Ltd., 78.6%, Brown-McDade Mines Ltd., 48.7%.

A few miles north of the Mount Nansen Mines property Peso Carmacks Gold Mines Ltd. also holds a block of 306 claims on unexplored but promising ground where high grade gold-silver float has been found in the overburden. Peso Silver Mines Ltd. owns 87% of the outstanding shares of Peso Carmacks.

History: Following the Klondike Gold Rush of 1898 placer miners spread through the Yukon and in 1910 most of the creeks in the Dawson Range, wherein Mount Nansen lies, were staked for placer gold. One or two of these placer claims were worked intermittently on the creeks north of the Webber Creek and some coarse gold was produced but essentially none of the operations proved consistently economic. In 1930 gold was found in place on Mt. Freegold, fourteen miles north of Mount Nansen Mines Ltd., and a small staking rush took place in the district. The Timmins Corporation began underground exploration on Mt. Freegold in 1934 and subsequently that property, the La Forma Mine, has changed owners frequently until finally, in 1965, Discovery Mines Ltd. has brought it into production as a gold mine at a target rate of 125 tons per day.

In the Nansen area the first lode deposit was found by prospectors Brown and McDade in 1943. Sampling of the surface trenches on their showings, plus subsequent drilling, returned sufficiently high values in gold and silver to induce Leitch Gold Mines Ltd. to form Brown-McDade Mines Ltd., and explore the ore zone underground with extensive drifting and drilling from a crosscut adit in 1946. At the same time Conwest Explorations Ltd. explored the Webber Creek area, 2 miles to the west, and the Huestis Syndicate trenched the Huestis Vein zone about one mile west of Brown-McDade. Underground results at Brown-McDade did not meet expectations and the project was abandoned in 1947 and all activity ceased in the area.

In 1958 prospecting activity revived in the area once again and in 1962-63 the Mt. Nansen Mines Syndicate (Newmont, Noranda, Rio Tinto, Kerr-Addison, Conwest, and Faraday) was formed and extensively stripped the Webber and Huestis vein zones and drilled four holes into the Webber zone.

In 1964 Mt. Nansen Mines Ltd. came under the control of Peso Silver Mines Ltd. and a program of further stripping, sampling and extensive overburden drilling was done on the Webber and Huestis vein zones. The results of this work prompted underground exploration, and drift adits were collared in December, 1964, and March, 1965, on the Webber and the Huestis respectively. In 1965 the old Brown-McDade workings were remapped, resampled and are presently being check-drilled by Mt. Nansen Mines Ltd. Enough encouraging data has been accrued by the underground and surface exploration on all three zones (Webber, Huestis and Brown McDade) to warrant the preparation of a sumary report outlining the prospects and goals for future work on the properties.

Physiography: The Mt. Nansen Mines area is a region of sparsely forested rounded, subdued hills and ridges with relief up to 2000 feet. The horizon is characteristically even with the exception of three prominent peaks Mt. Klaza, Mt. Nansen and Victoria Mt., all of which are over 6000 feet in height.

LEGEND

VEIN ZONES EXPOSED BY STRIPPING

VEIN ZONES INDICATED BY FLOAT

ROAD

ADIT

WEBBER

CAMP

WEBBER CR.

70

1

2

WEBBER RIDGE

NORTH MC DADE

BACK CREEK

MC DADE RIDGE

BROWN McDADE

PONY CR.

50

TO CARMACKS

CABIN CREEK

HUESTIS

12

13

75

CABIN CR.

HUESTIS RIDGE

DOME CR.

N

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MT. NANSEN MINES LTD.
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RELATIVE LOCATION PLAN

MT. NANSEN VEIN ZONES

AS EXPOSED TO DATE

SCALE: 0 1000 FEET

NOV. 1 1965

FIG. 2

The area has not been glaciated therefore the bedrock is under a cover of oxidized soil and frost-roiled broken rock derived from the bedrock during preglacial times. This cover is now tightly frozen by permafrost and ranges in depth from nil on the ridges and peaks to over 100 feet in the valleys. Generally speaking bedrock outcrops are sparse in the region and restricted to the ridges. This feature of the area has directly effected exploration in that all stripping and underground development to date has been confined to ridges and has been governed by geology only insofar as the vein zones found crossing the ridges have been explored. The extensions of these zones into deep overburden areas, as well as any other vein zones that might occur in such areas have not been searched for or explored. For this reason, the potential of the area has been barely tapped and since results of development have been most encouraging at the Webber, the Huestis and the Brown-McDade, the only three places extensively explored, the statistical and geological chances of the existence of other equally productive but undiscovered ore zones in the area are excellent.

Presentation: The salient features of the geology and the ore occurrences of the Webber, the Huestis and the Brown-McDade prospects are presented in this report separately but it is evident that if at all possible the three properties should be developed and mined in concert to provide feed for a common mill.

GENERAL GEOLOGY

The detailed geology of each of the Mt. Nansen properties will be described in separate parts of this report but to provide proper perspective for each of these parts the regional geology is briefly described below.

The Mt. Nansen area lies on the eastern edge of the main Cordillera batholith that trends northwestward across southwestern Yukon. Extensive granite and granodiorite intrusive bodies of post-Triassic age are abundant north and south of the mine area but the immediate mine area is underlain not only by such intrusive rocks but also by older metamorphosed sedimentary formations and younger unmetamorphosed volcanic formations. Geologically the area can be considered an ideal setting for the occurrence of Cordillera-type ore deposits.

The oldest rocks in the area are gneisses, schists and quartzites of the Yukon Group, believed to be of Precambrian-to-Cambrian age. These rocks underlie the southern and western portions of the property and are exposed as alternating bands of schist, quartzite and amphibolitic rocks. The formations in the Yukon Group generally strike northeastward and dip to the west.

Unconformably overlying the Yukon Group formations is an extensive thickness of Jurassic volcanic rocks termed the Mount Nansen Group. This group includes andesite flows, breccias and agglomerates, basalt flows and related dioritic intrusives. The diorite is exposed on the east side of the Webber ridge as intrusive into or contemporaneous with basalt and in turn is intruded by later granitic rocks. Extensive rhyolite intrusive bodies occur in the area and they may be contemporaneous with the Mount Nansen Group rocks but are more probably later than them and are themselves intruded by later granitic intrusives. The Mount Nansen Group of volcanic rocks generally strike east-west across the ridge that forms the topographic backbone of the property. The dome at the south end of the ridge is comprised of rhyolite, the smaller but more rugged knob 1500 feet north of the dome is comprised of a basalt-andesite breccia that appears to be a plug intruding the surrounding basalt.

Intrusive into all the preceding rocks are two types of granitic rocks; granodiorite and porphyritic granite. The former rock is believed by some geologists to be of Jura-Cretaceous age while the latter is assumed to be Tertiary in age. The two rocks occur side-by-side in the Brown-McDade adit but are separated by a fault three feet in width.

The mineralized structures in the area of Mt. Nansen are comprised of complex fault-shear-alteration zones that cut all of the above-described rocks and are known to be persistent for many thousands of feet in length and at least 500 feet in depth. All of these zones strike northwest to northnorthwest and dip steeply to the west. These zones are characterized in most places by a gouge plane, generally on the footwall, adjacent to which is intensely sheared and altered rock which is locally host to replacement lenses and veins of quartz, carbonate and ore minerals. On the east side of the property the Brown-McDade zone, over 100 feet in width in the mine, pinches to the north to a foot or two in width. The cause of this pinching is a change in wallrock from

granodiorite at the mine to Mt. Nansen Group basalt and diorite north of the mine. Where it passes back into granitic rocks in the north half of the property the vein zone widens again to nearly 100 feet and is well mineralized and gold bearing. This attribute of the vein zones to pinch and swell with different wall rocks is an important factor in ore control and it is therefore vital that all exposures be accurately and closely mapped to establish a complete geological map of the entire property as exposures become available.

WEBBER VEIN ZONES

Bulldozer stripping on a ridge extending down the south side of Webber Creek has exposed a complex system of branching vein and fault zones for a length of 1500 feet over a vertical rise of 200 feet. This is termed the Webber Vein Zone. The vein structures are buried under the overburden of Webber Creek valley to the north end and are faulted to the west, under valley overburden, at the south end. Sampling of the surface exposures of the main vein zone (1300 ft. exposed length) and a major branch to the south (No. 2 Vein, 580 feet exposed length), at five foot intervals indicated six principal ore sections with a total length of 740 feet, an average width of about 4 feet and an average grade of 0.43 oz. Au and 29.6 oz. Ag per ton.

Less extensive stripping exposed 300 feet of length of another, parallel, vein structure down the hillside 1200 feet to the southwest. Similar surface values occur on this vein as on the Webber but the average width is about 3 feet. This is known as the Cabin Creek Vein.

In December, 1964, an adit was collared below the northernmost exposure of the Webber Vein and since that time approximately 2200 feet of drifting, driving and crosscutting have been done at a level 150-200 feet below the sampled surface exposures. Of this development footage, 880 feet have exposed the No. 1 (Main) Vein structures for a strike length of 780 feet; and 500 feet have exposed the No. 2 Vein structure. Approximately 720 feet of No. 1 Vein which exposed ore sections on the surface has still to be drifted.

WALLROCK GEOLOGY: The wallrocks of the explored portion of the Webber Vein Zone belong principally to the Yukon Group and are comprised predominantly of thin-bedded foliated quartzites and some quartzitic schists and finely banded gneisses which locally grade into gneissic skarns with high contents of garnet, diopside and quartz etc. Intercalated with these metamorphic rocks are irregular, relatively narrow, bands of hornblende-rich rock which are probably metamorphosed greenstone sills. There are local open folds in the Yukon Group rocks in the mine but generally they strike northerly and dip steeply to moderately to the west. From the portal into the drift for a distance of 500 feet oxidation of the wallrocks in the vicinity of the vein zone has been intense and positive identification of the original rock is virtually impossible other than to establish that they were either finely banded feldspathic quartzites or gneisses. The oxidation products are principally limonite, clay and manganese stain and apparently extend to a depth of about 100-150 feet below surface.

Two rock types are intrusive into the above-described Yukon Group rocks: 1) granodiorite, and 2) rhyolite porphyry. The granodiorite crops out at the west side of the portal and extends southward along the west (hanging) wall of the main vein zone for a distance of 230 feet. No other granodiorite occurs in the mine but some of the country to the north and west, across Webber Creek is underlain by granodiorite. The ryholite porphyry is exposed in the drifts and in drill holes as a very irregularly-shaped elongate, steeply dipping body that trends roughly east-west across the vein zones about 300 feet south of the portal. This ryholite body ranges in width from 50 feet to 150 feet and exhibits very irregular, sharply indented borders which are chilled in some places and gradational in others. The rhyolite is a massive, hard, creamy gray-coloured aphanitic rock with watery quartz and chalk white feldspar phenocrysts (¼") abundantly distributed throughout. The rock as a mass is extremely blocky and competent with the result that the vein zones pinch down to a few inches as they pass through it. The rhyolite porphyry also commonly occurs as very irregular, generally narrow, chilled dikes along the vein zones.

ORE STRUCTURES: The vein zones themselves are related to but not everywhere coincident with strong northwest-trending fault structures that are characterized by one prominent hanging wall gouge plane with or without adjacent subsidiary shears. These fault zones dip 50-75° to the west. The fault zones tend to strike more northerly than the vein zones and in many places the two structures cross along strike. There appears to be no displacement at these crossings, which are at very low angles, and in all of them vein material occurs along the fault structure for tens of feet beyond the point where the main vein zone has parted from the fault.

The vein zones themselves are apparently members of a tension fracture system that strikes 20°-30° west of north and dips 70° westward. Gouge planes occur in many

places along the vein zones but they invariably pinch down to tight fractures many of which turn off the main zone and fray out where another one will pick up along the zone. In many places the vein zones are comprised only of tight fractures along which vein material has either replaced the wallrock and/or filled open spaces along the fracture system. A considerable length of No. 2 Vein, near the crosscut, consists of tight discontinuous cross or gash fractures which are closely enough spaced to form an elongate zone or ladder structure of very good ore grade and width. Practically all of the veins and vein fractures comprising any one vein zone form an en echelon pattern in that one vein will pinch out where another will appear beside it.

The vein material is comprised mostly of watery, cherty quartz and white crystalline quartz, the former generally as replacement along the zones. In the wider sections of vein zone the quartz as well as included fragments of wallrock are generally rusty and sheared. Within the ore zones the quartz is host to extremely finely divided pyrite and arsenopyrite which appears as watery black streaks or solid masses. A pale yellow secondary stain is characteristic of high grade silver ore and is possibly argentojarosite. No visible gold or identifiable silver minerals have been seen megascopically in the ore, even in places of extremely high assays.

FAULTS: Both the vein zones and the parallel fault zones described above are offset by a set of faults which strike 10°-15° north of east and dip 60°-80 north. These faults range in size from single planes, with a thin smear of gouge, to zones of gouge, brecciation and shearing up to 20 feet in width. Most frequently there are several fault planes spaced within a few feet of one another, each contributing a portion of the overall displacement, thus many offsets are a series of steps. Drag vein material, especially sulphides, is readily visible on all faults and gives reliable indication of the direction of displacement. The displacements appear to be largely horizontal with minor vertical components. The direction of the displacements is paradoxial in that it is not consistently in one direction. Of the exposed faults, both major and minor, which displace the Webber Zone six are left hand displacement and five are right. Displacements range from a few inches to tens of feet and the major right-hand fault that offsets the vein zone at the south end of the surface exposures has a displacement of at least 60 feet and possibly over 100 feet. Displaced portions of veins in ore are readily found by testholing and assaying sludge, otherwise diamond drilling is necessary.

ALTERATION: The vein zones and the wallrock on both sides are invariably completely silicified to a cherty, white quartz which in some places is difficult to discern from the quartzite except that it is whiter and that it tends to destroy the banding of the wallrock. In No. 2 Vein some sections are nothing more than an intensely silicifed zone within which swarms of longitudinal and cross fractures are filled with sulphides to the extent that the whole zone is ore. All of the fault zones have some chloritization associated with them but the predominant and ubiquitous alterations of the rocks within and adjacent to the fault zones are argillization and bleaching with or without later staining by limonite. The alteration zones generally do not extend more than a few feet on either side of the feeder, be it fault or vein zone.

ORE OCCURRENCES

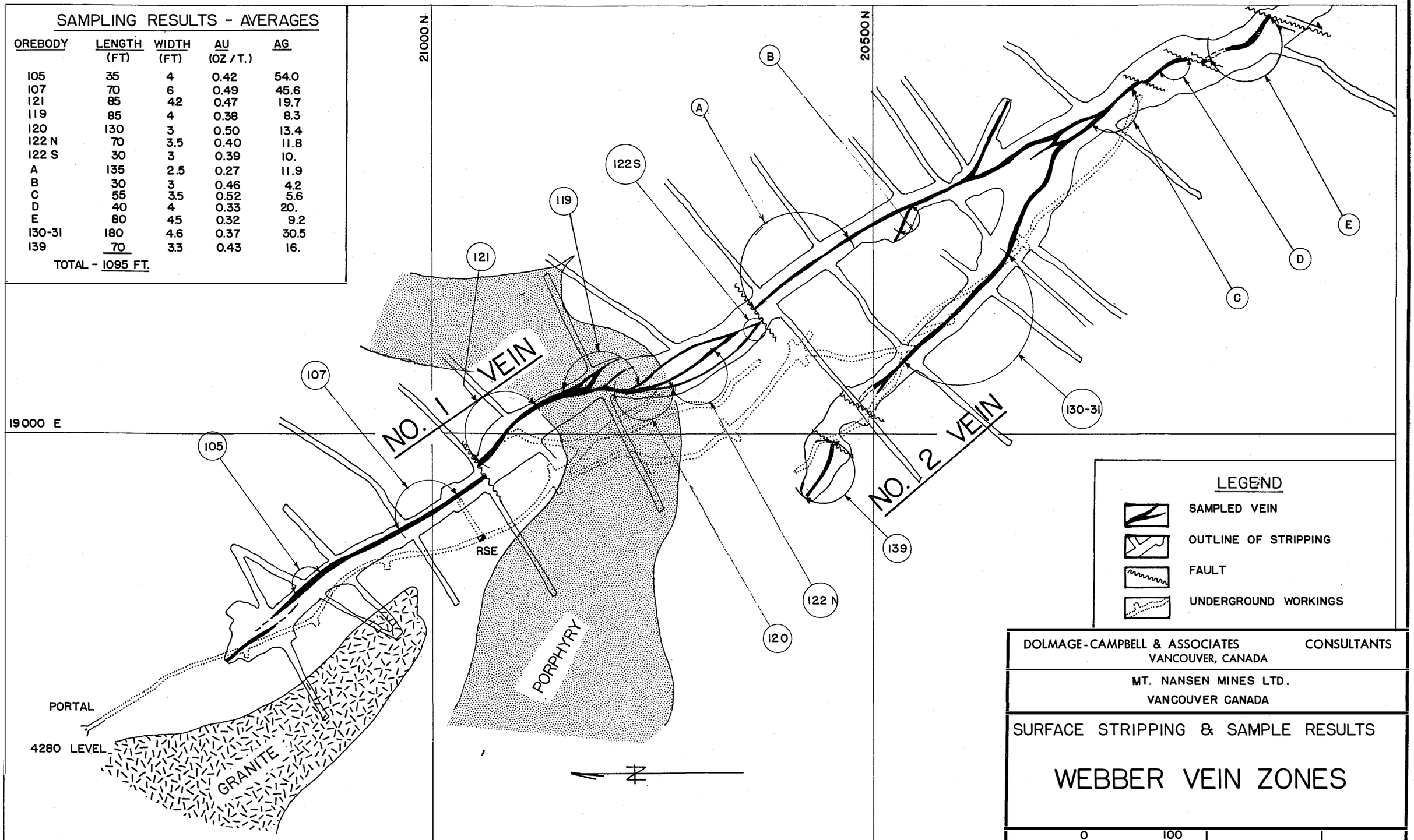
The general character of the Webber ore has been described earlier in this report. In most places the presence of ore mineralization can be detected by the appearance of arsenopyrite and/or yellow stain; however, in most places the grade is difficult to estimate by eye using this criteria. In most vein exposures if there is no arsenopyrite there is no ore although the amount of arsenopyrite is not necessarily a measure of the grade of gold and silver. Within any one ore shoot the gold and the silver maintain a reasonably consistent ratio, but different ratios pertain from ore shoot to ore shoot, particularly where silver is concerned. Throughout the orebodies the average grade of the gold will range from 0.2 oz. to 1 oz. per ton, whereas that of the silver will range from 3 oz. to 100 oz. per ton. The amount of silver in any one ore shoot determines whether it is a high grade or low grade shoot. Gold occurs in all ore shoots and is the prime metal in the low grade ones, whereas silver is high in some and practically absent in others.

A specimen of typical ore material from the second ore shoot south of the portal assayed 0.70 oz./ton Au and 4.6 oz./ton Ag; and was comprised of gray-white cherty silica, apparently brecciated and healed by pale green scorodite, with very fine pyrite and arseno-pyrite sparsely disseminated throughout the quartz. It is of interest that

SAMPLING RESULTS - AVERAGES

OREBODY	LENGTH (FT)	WIDTH (FT)	AU (OZ / T.)	AG
105	35	4	0.42	54.0
107	70	6	0.49	45.6
121	85	4.2	0.47	19.7
119	85	4	0.38	8.3
120	130	3	0.50	13.4
122 N	70	3.5	0.40	11.8
122 S	30	3	0.39	10.
A	135	2.5	0.27	11.9
B	30	3	0.46	4.2
C	55	3.5	0.52	5.6
D	40	4	0.33	20.
E	80	4.5	0.32	9.2
130-31	180	4.6	0.37	30.5
139	70	3.3	0.43	16.

TOTAL - 1095 FT.



LEGEND

- SAMPLED VEIN
- OUTLINE OF STRIPPING
- FAULT
- UNDERGROUND WORKINGS

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SURFACE STRIPPING & SAMPLE RESULTS

WEBBER VEIN ZONES

SCALE: 0 100 FEET | NOV. 1 1965 | FIG. 3

this type of ore is strikingly similar in mineralogy and appearance to the Brown-McDade ore. A comparable specimen from Brown-McDade, somewhat higher in pyrite-arsenopyrite content assayed 0.64 oz./ton Au and 6 oz./ton Ag. It seems evident that all the deposits in the Mt. Nansen area have a common genesis although the host structures are considerably dissimilar.

ORE TENOR: Mapping and sampling of the Webber Vein zones has indicated that the ore shoots on the vein zones have at least local persistency in size and grade. With few exceptions the ends of the ore shoots are sharp, exhibiting direct transition from ore to waste with negligible "tailing off" as marginal ore. Within any one ore shoot, whether very high or very low grade, there is a general constancy of grade, particularly when averaged to a common width. Any wide variations in grade that do occur within an ore shoot are the exception. High grade lenses occur within some ore shoots but they appear to be cores flanked by lower grade material and are not dispersed as erratics.

The boundaries of the orebodies are remarkably regular in that every surface ore shoot can be projected directly down dip to a corresponding ore section on the level 200 feet below.

The average grade of the Webber ore shoots as sampled on the surface was **0.43 oz./t. Au** and **29.6 oz./t. Ag,** across an average width of 4 feet. The total average grade of all the ore shoots, both on surface and underground is **0.39 oz./t. Au** and **23.3 oz./t. Ag** across 4 feet, with more ore occuring underground but at a somewhat lower average grade than on the surface. The highest grade ore section is a surface one 90 feet in length that assays 0.57 oz./t. Au and 38 oz./t. Ag across an average width of 5 feet. The lowest grade ore section used in the ore reserve calculations is an underground 70 feet length assaying 0.17 oz./t. Au and 11.2 oz./t. Ag across an average width of 2 feet. (In the latter ore section the actual average vein width is only three inches yet despite expansion to a 2 ft. mining width the grade is still appreciable. The grade of the undiluted ore (3") is 1.36 oz./t. Au and 89.6 oz./t. Ag.

The higher grades of gold and silver may or may not occur within the same ore shoots. As pointed out earlier, the gold values tend to maintain a relative consistency from shoot to shoot, whereas the silver values range considerably from shoot to shoot, for example:

	Au (oz./t.)	Ag (oz./t.)	Width	
Orebody 101 B	0.32	2.3	3	(not used in reserves)
Orebody 105	0.38	9.7	4	
Orebody 130	0.20	56.1	3	

ORE DEVELOPMENT: Surface stripping by bulldozer of the Webber Vein zones was done throughout two summers (1963-64) with the average depth to hard rock being about 4 feet. Because the overburden is solidly frozen by permafrost the stripping process is slow, a few inches are scraped off each day and the underlying material is exposed to thaw. The stripping at Mt. Nansen is one of the most ambitious such programs undertaken in the Yukon insofar as the vein was completely exposed for a length of 1300 feet. Extension of this stripping along strike is impractical because the overburden deepens to tens of feet within a short distance at each end. When hard, reasonably fresh bedrock was encountered in the stripping a trench one foot in width and 6" to 1 ft. in depth was dug by pick and shovel across the vein zones at 5 ft. intervals, channel samples were then cut along the floors of these trenches. In this manner the material sampled was as little oxidized as any possible to get on the surface.

Following the surface sampling in 1964 approximately 70 overburden holes were drilled into the No. 1 and No. 2 Webber Vein zones to intersect the veins at depths between 30 and 70 feet below the surface. These were percussion holes drilled dry by a Copco machine. All cuttings were recovered and assayed. In general these holes indicated persistence to the depths drilled of the surface ore sections and the results from that drilling provided encouragement for proceeding with underground exploration.

In 1963 the Syndicate that then had the property drilled four diamond drill holes beneath the best surface ore section. Hole W-3 was at the south end of the ore shoot, W-2 at the north end and W-1 and W-4 in the centre. Holes W1-3 intersected the vein at 100-150 ft. depths while W-4 intersected at 300 ft. depth. The following intersections were obtained from these holes:

	Au (oz./t.)	Ag (oz./t.)	Width
W1	.23	7.6	6.5
W1	1.34	46.0	1
W2	.09	0.2	3.4
W3	.01	18.0	0.2
	1.10	189.6	0.3
W4	0.3	0.88	16.8

Examination of the cores from these holes reveals an excessively high core loss (60-80%) and it is remarkable that even the above results were obtained. Nonetheless, holes W1 and W3 intersected good ore that was subsequently confirmed by the level exposures. Hole W2 is just beyond the ore shoot. Hole W4 had very meagre core recovery (15%), but if the 16.8 ft. is reduced to a probable true width of 4 feet and the values are weighted accordingly it indicates an intersection of 0.13 oz./t. Au and 3.7 oz./t. Ag at a depth 100 feet below the present level. Considering the core recovery, the writer feels that this intersection at least represents the persistence of this main ore section to depth, with no significance as to grade.

When the drift adit was begun it was desired to obtain as much drift exposure on the vein zones as possible; however, as development proceeded it was found that because of faults, en echelon vein zones and branching of the veins, progress was slow. For this reason a drive was driven between No. 1 and No. 2 Veins for a length of 400 feet and the veins drilled off by diamond drill to provide a guide for subsequent drifting. In many places entire veins or portions of them are in the walls of the drifts. These sections have been thoroughly probed by test holes and integrated by mapping and diamond drilling.

At the present time, on the adit level, the No. 1 Vein Zone requires to be drifted to the south another 400 feet, to the junction with No. 2 Vein, and then another 300 feet south to the major fault mapped on the surface. No. 2 Vein requires to be drifted at least 400 feet to the northwest, beyond which it is approaching the surface. Subsequent exploration would be deep diamond drilling from the level and, with reasonable results, the establishment of deeper levels. Subsequent development would be raises and sub-drifts above the adit level in the ore shoots and taking down backs preparatory to stoping.

ORE CONTROLS: Development work is as yet too meagre to comprehensively establish the ore controls for the known ore shoots on the Webber structures; however, two controls are already evident; 1) wallrock competency, and 2) fracture junctions. The highest grade and widest ore shoot on No. 1 vein occurs on the north side of the rhyolite porphyry body within Yukon Group metasediments, the ore within the porphyry is narrow and low grade. There is also a suggestion that the ore is wider and higher grade at or near splits in the vein zones.

CABIN CREEK VEIN

No work has been done on the Cabin Creek Vein by Mount Nansen Mines Ltd., but stripping and close sampling of 220 feet of the vein by the Syndicate in 1963 revealed a length of 110 feet that grades 0.23 oz./t. Au and 25.6 oz./t. Ag across an average width of 6.1 feet and open to the southwest. This material is ore grade therefore this vein warrants further exploration, logically by some overburden drilling and subsequently by an adit which could be connected underground with the Webber workings at a later date.

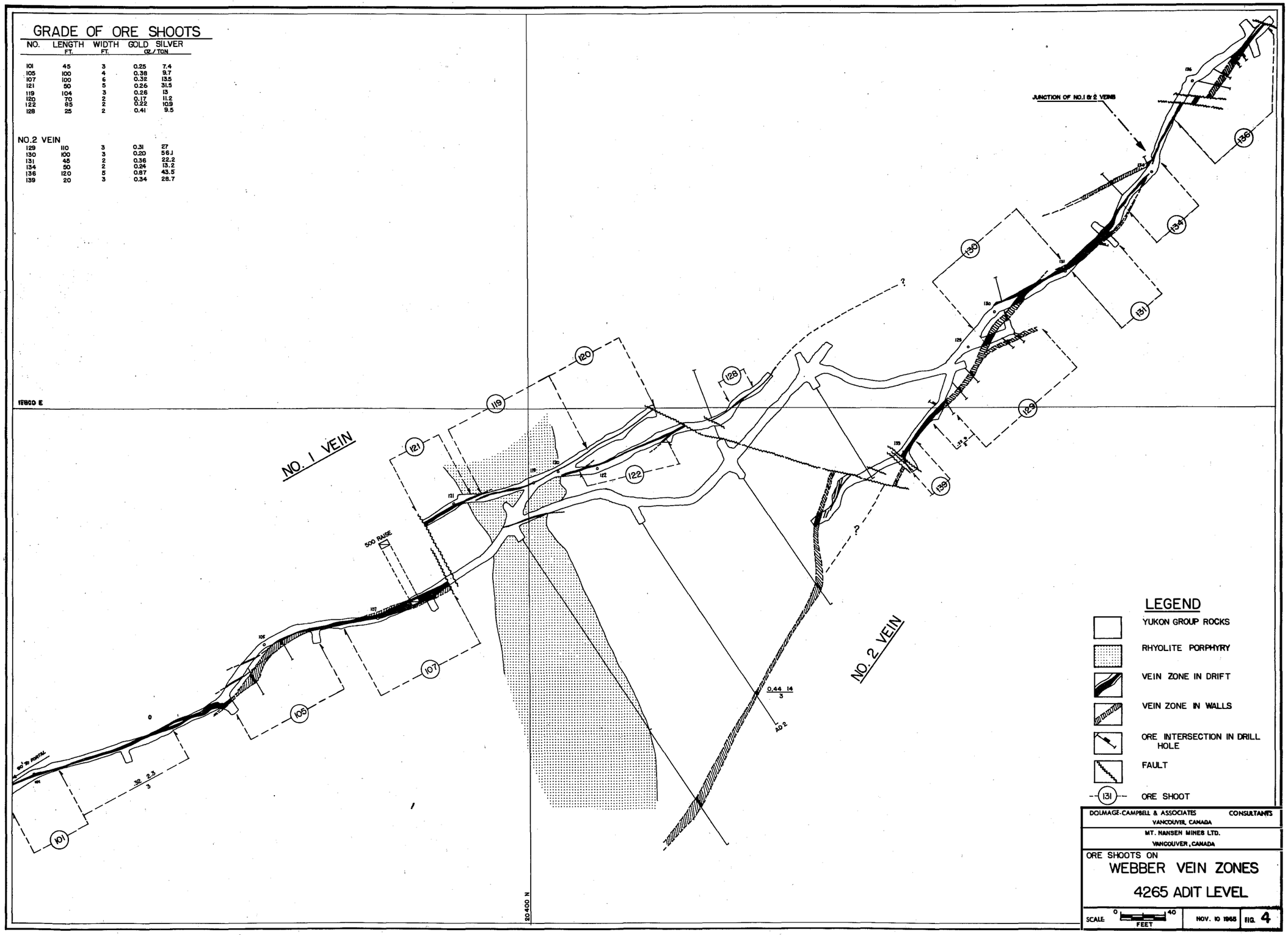
It is premature to estimate the potential of the Cabin Creek Vein at this time, with so little work done on it, but it appears likely that this vein can provide an appreciable supplement to the Webber production. On the basis of the surface stripping only, in light of the results obtained on the Webber Vein, there appears to be at least 1000 tons of probable ore on the Cabin Creek Vein.

WEBBER ORE RESERVES

It is realized that with development at such an early stage it is presumptive to calculate ore reserves at the Webber Mine on the same basis as would be done in a producing mine; nevertheless, the drifting, surface stripping, raising and drilling done to date have been comprehensive and have both proven some ore and indicated a potential for more. Such a score, whatever it may be, should be recorded not only to

GRADE OF ORE SHOOTS

NO.	LENGTH FT.	WIDTH FT.	GOLD OZ/TON	SILVER OZ/TON
101	45	3	0.25	7.4
105	100	4	0.38	9.7
107	100	6	0.32	13.5
121	50	5	0.26	31.5
119	104	3	0.26	13
120	70	2	0.17	11.2
122	85	2	0.22	10.9
128	25	2	0.41	9.5
NO.2 VEIN				
129	110	3	0.31	27
130	100	3	0.20	56.1
131	45	2	0.36	22.2
134	50	2	0.24	13.2
136	120	5	0.87	43.5
139	20	3	0.34	28.7



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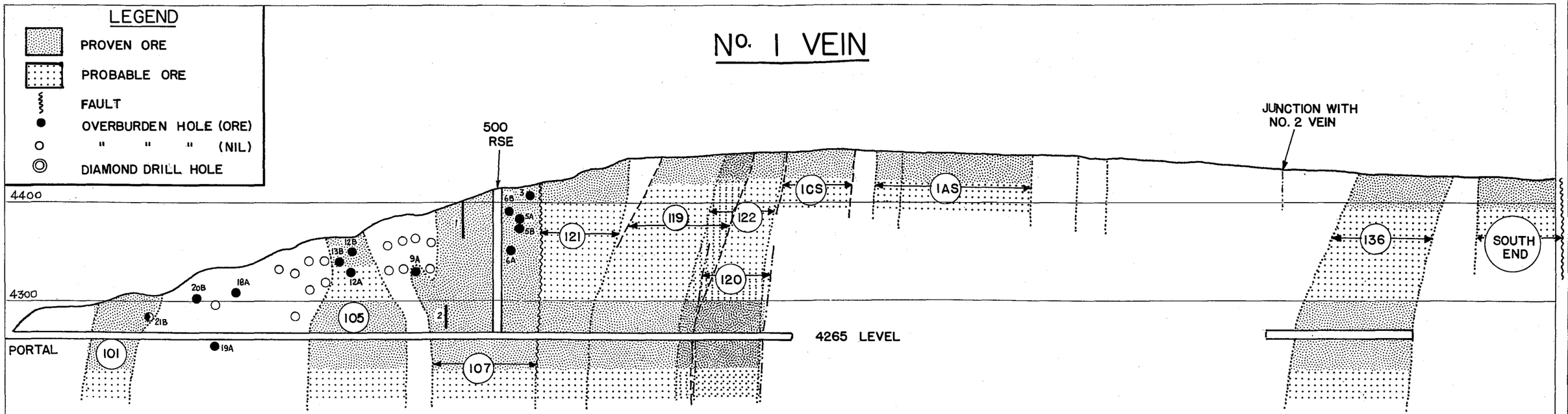
ORE SHOOTS ON
WEBBER VEIN ZONES
4265 ADIT LEVEL

SCALE 0 40 FEET | NOV. 10 1965 | FIG. 4

LEGEND

- PROVEN ORE
- PROBABLE ORE
- FAULT
- ● OVERBURDEN HOLE (ORE)
- ○ " " " (NIL)
- ◎ DIAMOND DRILL HOLE

No. 1 VEIN



NOTE

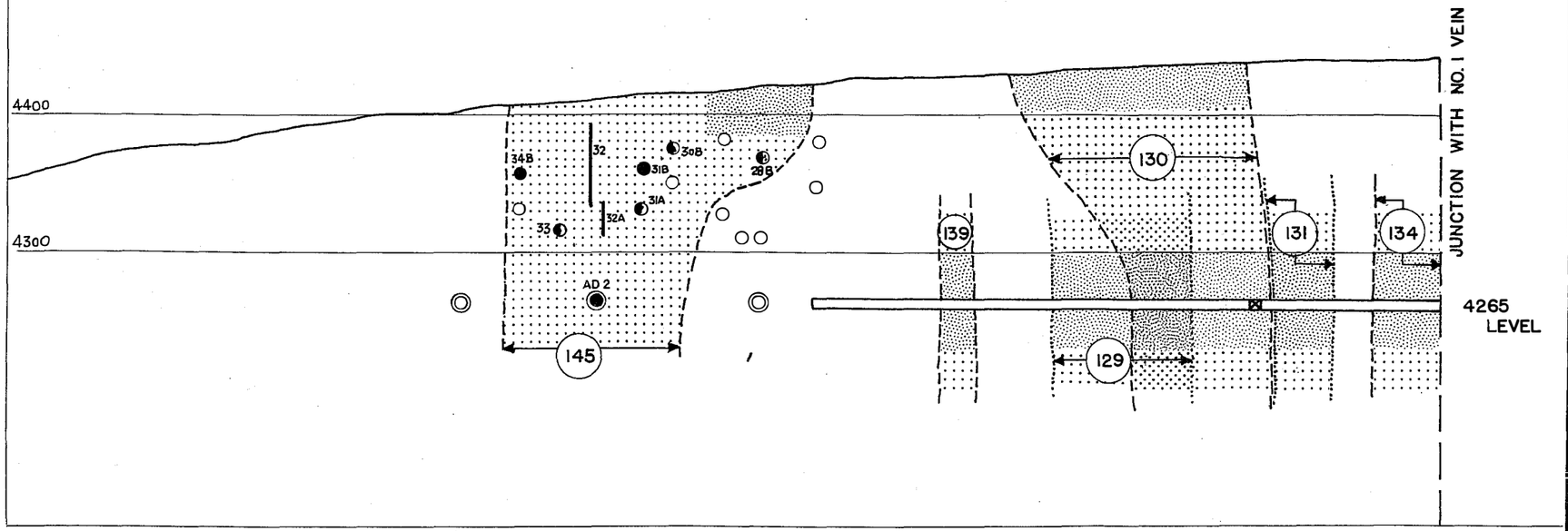
GRADES OF SURFACE AND UNDERGROUND EXPOSURES OF ALL ORE SHOOTS ARE LISTED IN TABLE I OF THIS REPORT.

DRILL HOLE ASSAYS

HOLE	AU	AG	FT.
1	.60	30.	35
2	.53	20	20
3	.27	4.6	3
5A	.36	11.5	2
5B	.47	13	2
6A	.33	41	5
6B	.59	52	2
12A	.22	27.8	7
12B	.13	6	3
13B	.35	25.6	4.5
18A	.65	0.5	3
19A	.29	22.7	3
20B	.43	1.6	3
21B	.41	4.7	3

HOLE	AU	AG	FT.
30B	.19	3.3	3
31A	.10	11.3	1
31B	.56	24.4	1
32	.59	19.6	61
32A	.28	9.9	27
33	.18	5	5
34B	.33	11.4	4
28B	.13	9.4	3
AD2	.44	14	3

No. 2 VEIN



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LONGITUDINAL VERTICAL SECTIONS

WEBBER ORE SHOOTS

VEINS 1 & 2

AS USED FOR ORE RESERVE CALCULATIONS

SCALE: 1" = 100 FT. | NOV. 1 1965 | FIG. 5

render perspective to the results achieved to date but also to facilitate the establishment of reasonable and realistic targets for future development. For these purposes the writer has slightly modified the generally accepted procedure used by Canadian mining companies in estimating ore reserves on vein-type deposits. In this report the writer has used the following criteria:

Proven ore— Ore within 30 feet of completely exposed and sampled ore; whether drift, raise or on surface.

Probable ore— Ore within 30 feet of proven ore. Ore drilled off by test holes and partially exposed by drift or crosscuts (For 30 feet from the level). Ore within a 30 ft. radius of a diamond drill hole intersection.

In the case of the Webber zones, wherever the surface ore shoots match the underground shoots in position, grade etc., as most of them do, the entire intervening section between the proven ore boundaries is categorized as probable ore. In most places this has been verified at least in part by overburden drill holes and, in the case of the main ore shoot, by a raise through to the surface.

Possible ore— Until more is known about the ore zones this category will not be used. It is included now under "potential".

SAMPLING PROCEDURES:

The technique followed in the surface sampling has been already described.

The importance of establishing a reliable sampling procedure for the underground development was realized from the beginning, particularly in view of the fact that the character of the ore was unknown, that probably extremes in grades would exist on the veins, and that it would probably be a long time before the deposit could be thoroughly back sampled if the condition of the ground permitted it. Therefore; initially each face was sampled wall to wall by three channels cut at 6, 4 and 2 feet above track. Also, every round was muck sampled by taking a random handful from the top of every second or third car so that about a powderbox of sample was garnered to represent the round. After 200 feet of ore was drifted it was found that the erratics expected in the ore did not occur and that for most faces the three channels would be about the same. Check calculations indicated that if any two channels per face were used for calculations the average of the ore section was essentially the same as if the three channels were used. With this confirmation sampling was the decreased to two channels per face, at 2.5 and 5 feet above track.

In both the Webber and the Huestis zones metallurgical assaying of bulk samples, taken as raise and drift rounds, has confirmed the earlier face sample average grades exactly. In addition, in all orebodies, where the muck samples can be weighted by the known dilution the results generally correspond well with the face samples. One example is a section of No. 2 (N) Vein 20 feet in length which was first test holed then drifted, with the following average assay results

	Au (oz./t.)	Ag (oz./t.)	Width (ft.)
Test Holes	0.18	18	3
Face Channels	0.34	28.7	3
Muck samples (6 ft. drift)	0.27	18.6	6
Corrected mucks	0.54	37.2	3

This example is given because it is one of the few places where the test holes have been drifted out to provide correlation of all types of samples.

Another section of No. 2 Vein, 250 feet further south, returned the following average assays for an ore shoot 50 feet in length:

	Au (oz./t.)	Ag (oz./t.)	Width (ft.)
Face samples	0.36	22.2	2
Muck samples (drift width)	0.11	7.3	6
Corrected mucks	0.33	21.9	2

In many places much of the vein is in the wall and it is difficult to obtain a sensible check between face samples and mucks but wherever the drift is reasonably even and incudes the entire vein comparative results such as given above generally pertain.

From all of the foregoing evidence it has been assumed that the sampling procedures are returning dependable and representative results.

CALCULATIONS:

In calculating the average grades for each underground ore shoot the following procedures have been followed for this report. High assays have been cut only where they are obviously erratics and in so doing they have been cut to 1 oz. Au and 100 oz. Ag. This actually has been infrequent because high assays generally occur in a series of faces and obviously represent a particular high grade section of ore. (From experience the writer finds that indiscriminate cutting of assays without mill results as a check is in effect the introduction of a discretionary human element that can be grossly in error). It was also found that in those cases where the two channels from one face are widely separated in values, their uncut average is invariably close to the average of the ore shoot. Barren sections within an ore shoot at the Webber are uncommon to rare.

In calculating the grade of an ore shoot the two channel samples for each face were averaged for all faces within the shoot. These averages were then weighted to a common mining width determined by the assay boundaries and the mapping and in all cases taking in at least 20 percent dilution, thus the ore reserves as presented are adjusted for mining dilution. All the face averages were then averaged to produce a grade for that particular ore section. These averages were then applied to the respective tonnages calculated for each section and the resultant grades were weighted by the tonnages to produce a total grade for the total reserves. No grade has been given to "possible" ore.

The above procedures may not be the best, certainly any number of variations are possible, but the writer feels that they are reasonable and conservative enough, at this stage of development, to be a sound guide.

RESULTS:

Using the above-described procedures the ore reserve estimated at the Webber to date are as presented in detail in Table 1 of this report. As shown in the table, the total proven and probable reserves to date for the Webber Zone are:

	Tons	Au (oz./t.)	Ag (oz./t.)	Av. Width (ft.)
No. 1 Vein	53,455	0.42	21.4	4.2
No. 2 Vein	19,995	0.34	24.9	3.3
Total	73,450	0.39	22.3	4

The gross value of this ore is $45.60 per ton @ $37/oz. Au and $1.40/oz. Ag.

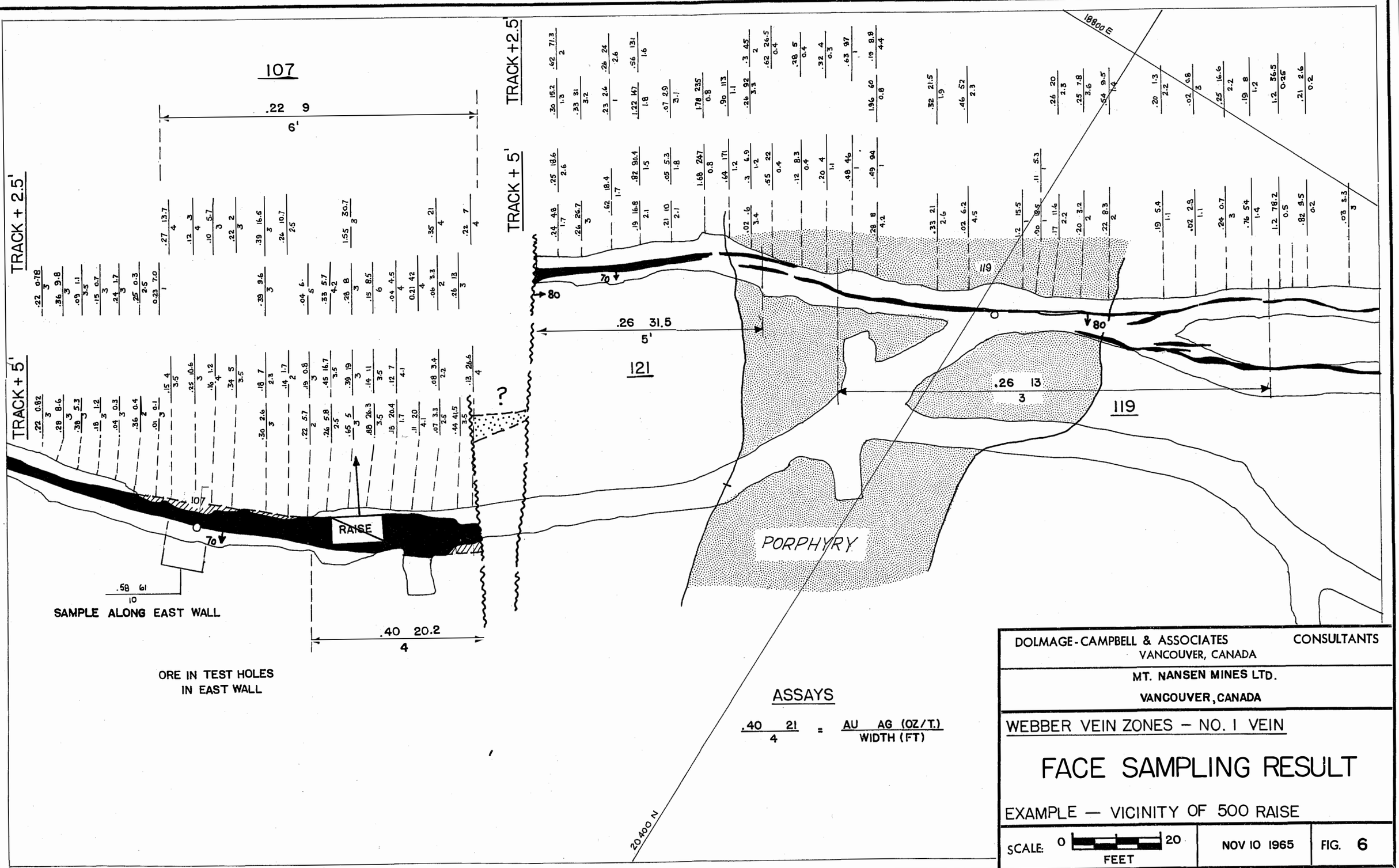
The only doubtful factor in determining the above reserves is the proper weight to put on the overburden drill results. No grade has been given to them for these calculations but it has been assumed that where ore grades were intersected in the holes they would permit valid projection of known shoots through those holes. In orebody 107, No. 1 Vein, two holes, 1 and 2, drilled down the vein beside the 500 Raise returned assays essentially comparable to slightly higher than those in the raise wherever the holes were in vein material. (In some sections the holes were in sheared rock in the sides of the vein.) Similarly, in orebody 145, No. 2 Vein, holes 32 and 32A, returned good assays to a depth of 100 feet, where they ran out of the vein, therefore it seems valid to project the surface ore to that depth as probable ore.

Several overburden holes were intersected by the 500 Raise, thus permitting some correlation of assays results which indicated a reasonable dependency in the overburden drilling. (A process wherein compressed air returns all the cuttings and dust instantly from the hole as it is drilled without water.) These correlations are:

Dry Hole	(Au) Assays	(Ag)	Length of Intersection	Raise Face
7A	1.12 oz.	87.9 oz.	15 ft.	1.09 oz. Au 73.6 oz. Ag
7B	0.12 oz.	6.0 oz.	3 ft.	0.26 oz. Au 14.4 oz. Ag

As indicated by the length of the intersections, hole 7A intersected the vein at a low angle and traversed it for 15 feet, allowing more opportunity for sampling; whereas, hole 7B, intersecting at a high angle may have hit a lean spot and returned lower than true results. In either case it is evident that where the overburden results indicate ore grade it can be assumed that "ore" grade exists although the exact grade may be in doubt.

Potential: The percentage of ore length per length of veins explored (1400 ft.) to date is 70%, a truly remarkable ratio for a vein type deposit. The only reason this portion of the Webber Zone was chosen to explore was because it occurs on a ridge where



ASSAYS

$\frac{.40 \quad 21}{4} = \frac{\text{AU} \quad \text{AG (OZ/T.)}}{\text{WIDTH (FT)}}$

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WEBBER VEIN ZONES – NO. 1 VEIN

FACE SAMPLING RESULT

EXAMPLE — VICINITY OF 500 RAISE

SCALE: 0 20 FEET | NOV 10 1965 | FIG. 6

overburden is shallow and the vein could be detected in the float and the values in panning. Since there does not appear to be any particular unique feature about the geology of this explored area, relative to those areas north and south, it is reasonable that exploration of the Webber Zone to the north and south could also return high ore/waste drift ratios. The northern section of No. 2 Vein has returned good results in the overburden drilling as well as in one diamond drill hole, but has yet to be drifted underground. No. 1 Vein still requires to be drifted to the south fault, after which underground drilling will be needed to locate the displaced portion of the vein. There is every reason to expect that the faulted portion of the vein, to the south, will be ore-bearing. Thus, both the immediate and the long term prospects for exploration of the Webber Zones along strike are excellent.

The only exploration below the 4265 Level to date has been the one surface diamond drill hole (W4) put down by the Syndicate in 1963. This was EX size core and returned low recovery (20%) and negligible values; however, it did record a vein zone width of 17 feet exactly on the dip projection. Also, if the ore shoots are projected straight down from the level, this hole would lie between shoots 105 and 107 (Fig. 5). The persistence of the ore shoots to a depth of 200 feet below surface has been consistent and excellent. The ore shoots in the quartz vein zones at the Discovery Mine ten miles to the north have been traced by drilling and drifting to a depth of 900 feet below surface.

One possible presentation of the potential of the Webber Zone for more ore of essentially the same grade as already developed is as follows:

1) Existing tonnage	75,000 tons
2) An equal drift length both north and south	125,000 tons
3) Depth to 1000 feet of above tonnage	1,000,000 tons
Total	1,200,000 tons

These figures are conceived and presented solely as possible targets for development of the mine but they are essential if the potential for investment is to be considered in reasonable perspective. It should be realized of course that these figures do not represent an absolute maximum of the potential, because the lateral extent of the vein zone on the property could be ten times this figure and the extension to depth could be triple it.

TABLE 1
WEBBER ORE RESERVES

WEBBER (No. 2 Vein)

Vein	Ore body	Width (ft.)	Length	Height	Grade Au	Grade Ag	$ Value	Tons	Category	Remarks
2N	145	3.5	70	30	.37	15.3	35.10	640	Proven	Surface
2N	145	3.5	140	180	.37	15.3	35.10	7650	Probable	Surface to 30 ft. below level 7 drill hole intersections
2N	139	3	20	60	.34	28.7	52.80	315	Proven	Drift
2N	139	3	20	60	.34	28.7	52.80	315	Probable	Above & below drift
2N	129	3	110	60	.31	27	49.30	1720	Probable	Test holes
2S	130	4.6	180	30	.37	30.5	56.40	2160	Proven	Surface
2S	130	3	100	60	.20	56	85.80	1565	Probable	Test holes & drift
2S	130	3	140	100	.37	30.5	56.40	3650	Probable	Between surface & drift
2S	131	2	45	60	.36	22.2	44.40	470	Proven	Drift
2S	131	2	45	60	.36	22.2	44.40	470	Probable	Above & below drift
2S	134	2	50	60	.24	13.2	27.40	520	Proven	Drift
2S	134	2	50	60	.24	13.2	27.40	520	Probable	Above & below drift

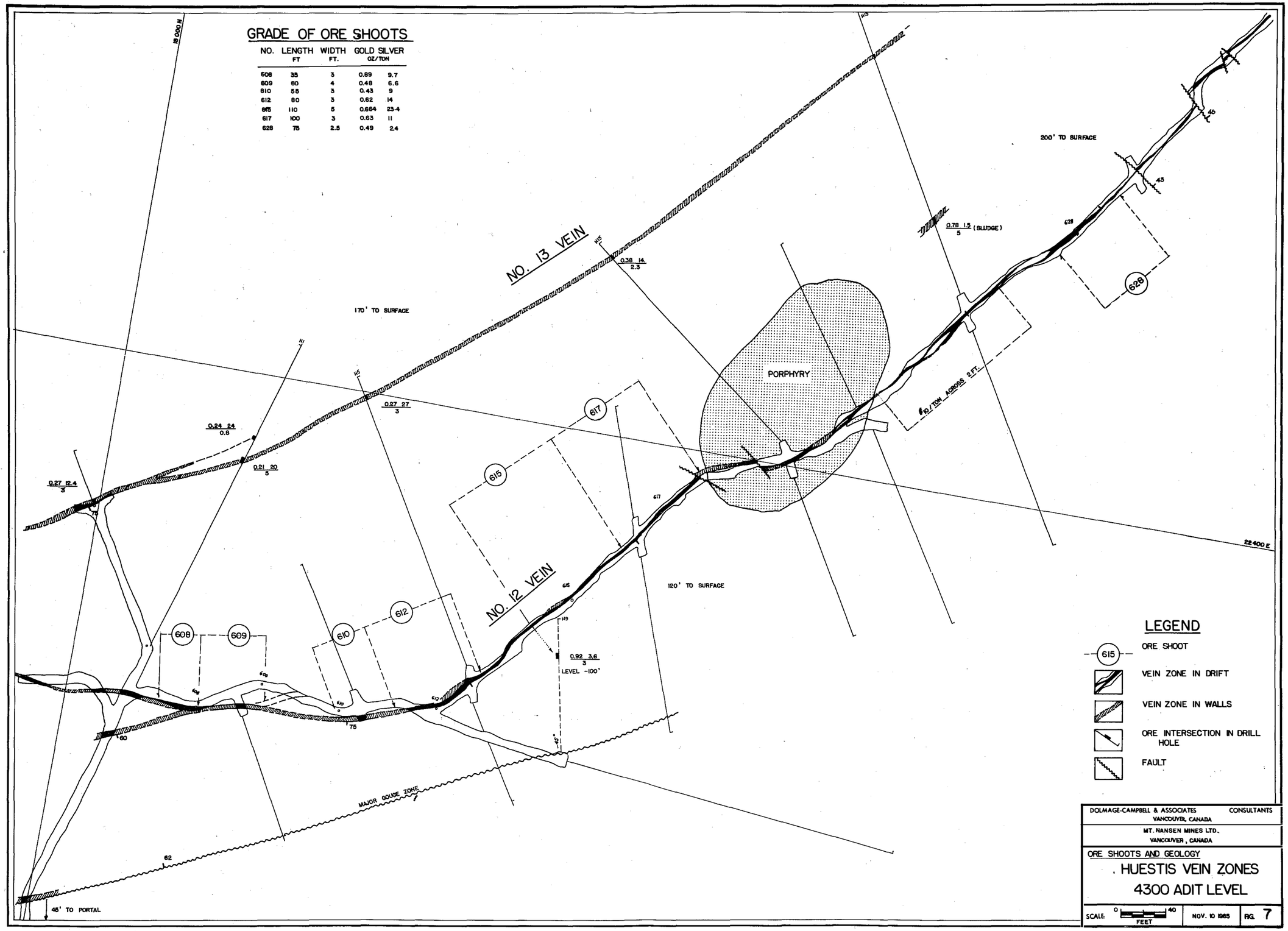
WEBBER (No. 1 Vein)

Ton Factor—11.5

Vein	Ore body	Width (ft.)	Length	Height	Grade Au	Grade Ag	$ Value	Tons	Category	Remarks
1	101	3	45	60	.25	7.4	20	705	Proven	Above & below drift
1	101	3	45	30	.25	7.4	20	350	Probable	Below level
1	105	4	100	60	.38	9.7	27.50	2080	Probable	Test Holes & Drift
1	105	4	35	30	.42	54.	91.10	365	Proven	Surface
1	105	4	70	70	.40	23.	47.	1705	Probable	Between surface & drift
1	107	6	112	200	.43	23.5	43.	11700	Proven	Raise samples not in grade
1	107	6	85	30	.32	13.5	30.70	1330	Probable	Below drift
1AN	121	5	90	30	.57	38	74.30	1200	Proven	Surface
1AN	121	5	50	60	.26	31.5	54.	1300	Proven	Drift
1AN	121	5	70	110	.46	35.7	67.	3350	Probable	Between surface & drift
1AN	121	5	50	30	.26	31.5	54	650	Probable	Below drift
1AN	119	3	105	60	.26	13	28	1645	Proven	Drift
1AN	119	3	105	30	.26	13	28	825	Probable	Below drift
1AN	119	4	90	30	.38	8.3	25.70	940	Proven	Surface
1AN	119	3	130	140	.38	12	30.80	4740	Probable	Between surface & Drift
1AS	120	2	70	60	.17	11.2	22	730	Proven	Drift
1AS	120	2	70	60	.17	11.2	22	730	Probable	Above & below drift
1AS	120	2	70	30	.17	11.2	22	360	Probable	Above drift
1BS	122	3	60	60	.50	13.4	37.30	940	Probable	Surface (not many samples)
1BS	122	2	85	60	.22	10.9	23.40	885	Proven	Drift
1BS	122	2	85	30	.22	10.9	23.40	440	Probable	Below drift
1BS	122	2.5	70	140	.44	12.4	33.70	2120	Probable	Between surface & drift
1CS		3.5	65	30	.40	11.8	31.30	595	Proven	Surface
1CS		3.5	65	30	.40	11.8	31.30	595	Probable	Below surface
1AS		2.5	160	30	.37	15.4	35.30	1042	Proven	Surface
1AS		2.5	160	30	.37	15.4	35.30	1042	Probable	Below surface
1AS	136	3	100	30	.41	5.7	23	782	Proven	Surface
1AS	136	3	100	70	.41	5.7	23	1825	Probable	Below surface
1AS	136	5	120	60	.67	43.5	85.50	3130	Proven	Drift
1AS	136	5	120	60	.67	43.5	85.50	3130	Probable	Above & below drift
1AS	south end	4.5	80	30	.32	9.15	24.60	940	Proven	Surface
1AS	south end	4.5	80	30	.32	9.15	24.60	940	Probable	Below surface
					.42	23.4	48.35	25960	Proven	
					.41	19.3	42.25	27495	Probable	
Total					.42	21.4	45.55	53455	tons	
Totals										
No. 2 Vein		3.6			.35	24.8		4105	Proven	
		3.2			.34	25.0		15890	Probable	
		3.3			.34	24.9	47.50	19995		
No. 1 Vein					.42	23.4		25960	Proven	
					.41	19.3		27495	Probable	
		4.2			.42	21.4		53455		
Total Webber					.41	23.6		30065	Proven	
					.38	214.		43385	Probable	
					.39	22.3	45.60	73450		

GRADE OF ORE SHOOTS

NO.	LENGTH FT	WIDTH FT.	GOLD OZ/TON	SILVER
608	35	3	0.89	9.7
609	60	4	0.48	6.6
610	55	3	0.43	9
612	80	3	0.62	14
615	110	5	0.664	23.4
617	100	3	0.63	11
628	75	2.5	0.49	2.4



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ORE SHOOTS AND GEOLOGY

HUESTIS VEIN ZONES
4300 ADIT LEVEL

SCALE: 0 — 40 FEET | NOV. 10 1985 | FIG. 7

HUESTIS VEIN ZONES

Across a saddle in the main ridge that runs southward through the Mount Nansen property, (Fig. 2), shallow overburden revealed gold and silver bearing quartz float. This saddle was trenched by thirteen northeast trending bulldozer cuts at about 100 feet spacing to expose oxidized, but reasonably in place, rock in which at least two vein zones were indicated as extending the full length of the trenching, 1300 feet. Many other zones of vein material were exposed in various trenches and they appear to represent branches off the two main structures. Sampling of the vein material in these trenches returned assays ranging from 0.60 oz./t. Au and 20 oz./t. Ag across two feet to 1.9 oz./t. Au and 117 oz./t. Ag across 2.5 feet in various trenches. Ore values were found in all trenches. In 1964 these showings were drilled by the overburden drill but in this saddle in the late summer, a water table forms and this effectively stopped all the dry drill holes attempted. In view of the good results obtained underground at the Webber Zone, 3500 feet to the northwest, the decision was made to explore the Huestis Zones underground without preliminary drilling. This decision has proved to be a good one since the underground results have been excellent and the high costs, and possibly difficult-to-assess results, of a drill program were avoided.

Two reconnaissance trenches on a ridge 3600 feet southeast of the Huestis stripping, exactly on strike with the veins, exposed a vein six inches in width assaying 0.5 to 3 oz./t. in gold and 50 oz./t. in silver for a length of 100 feet. It would be unsound to project the Huestis veins to these trenches of course but the existence of the orebearing vein in that locality is a fine indication of the favourable potential of the entire claim area beyond he specific places presently being developed.

In March, 1965, an adit was collared to cross-cut to the Huestis veins. The adit crosscut intersected the first vein, No. 12, at 270 feet and, in a later extension, the second vein, No. 13, at 400 feet. No. 12 vein has been drifted for a length of 1300 feet, and No. 13 vein for only 20 feet to date. Drifting southeastward from the crosscut will break out to surface in about 200-300 feet therefore most of the drifting has been to the northwest. On this level the backs increase very appreciably to the northwest as the main Webber Ridge is approached.

WALLROCK GEOLOGY: The wall rocks of the Huestis vein zones explored to date are comprised almost exclusively of metasedimentary rocks of the Yukon Group. In this area these rocks are principally quartz-feldspar-hornsblende fine crystalline gneisses which are locally schistose. Intercalated with the gneisses are widespread thin bedded, platey quartzites similar to those encountered at the Webber Mine. In the Heustis crosscut, near the portal, occurs a wide tabular body of massive hornblende "greenstone" which is apparently conformable with the metasedimentary sequence and probably represents a metavolcanic. Similar thin greenstone bands are not uncommon in the metasedimentary sequence throughout the Huestis Mine. These Yukon Group formations at the Huestis consistently strike north and dip steeply to the west. The vein zones follow two dominant strike directions, one is north, parallel to the wallrock bedding, and the other is northwest, across the bedding. The northwest-trending portions of the veins have proven to be more orebearing than the others.

Throughout the Huestis Mine the Yukon Group wallrocks are variously metamorphosed to skarns in local patches and streaks. The most widespread skarn minerals are garnet, diopside and redistributed quartz. To date no pattern of the skarn distribution has been deduced.

The only intrusive rock exposed in the Huestis Mine to date is an oval shaped vertical plug of quartz-feldspar rhyolite porphyry located 550 feet northwest of the crosscut. The plug is 150 x 220 feet in plan size and No. 12 vein cuts through the centre of it. The rhyolite porphyry is identical to that already described as occurring in the Webber Mine and forming the main peak of Webber Ridge. It is a hard, brittle, closely jointed rock within which No. 12 vein is narrow, discontinuous and barren, but immediately southeast of which is wide, continuous and extremely rich.

ORE STRUCTURES: Two major vein zones have been exposed in the Huestis drifts. They are parallel and approximately 200 feet apart. Both strike northward at the crosscut but turn to the northwest 250 feet north of the crosscut. Both dip vertically to steeply eastward and range in width from less than a foot up to eight feet, averaging 3-4 feet. The vein nearest the portal is termed No. 12, and the other vein No. 13.

The Huestis veins are essentially identical in character to the Webber veins in that they are quartz replacement and fracture fillings localized along fracture zones which are well-defined strong shear zones in the north-striking direction but are relatively poorly defined, en echelon shear and/or fracture sets in the northwest-striking direction. Despite the enechelon character of the northwest portions of the veins the vein zones in general are persistent throughout the lengths explored.

The vein material is the same as that described for the Webber Zones except that stibnite is more widespread at the Huestis. The gold silver values occur with the sulphides which occur generally as diffuse, fine grained black dispersions throughout the cherty quartz vein material. The predominant sulphides are arsenopyrite and stibnite.

FAULTS: Faulting is not as strong at the Huestis as it is at the Webber. The vein zones are cut by infrequent northeast-trending northwest dipping tight faults which exhibit either no displacement or a few inches to two feet left hand displacement.

The north-trending portion of No. 12 vein lies along elements of a very strong gouge-sheared zone but is only displaced a few feet where it joins this fault.

ALTERATION: As at the Webber silicification and bleaching is the commonest wallrock alteration along the Huestis vein zones whereas argillic alteration and leaching are widespread in the vicinity of the shear zones and faults.

ORE OCCURRENCES

Like the Webber Zones the Huestis Zones are rarely completely devoid of gold and silver. Many portions of the vein zones are not ore grade but they persistently carry up to 0.20 oz./ton of gold and a few ounces of silver across mining widths. No. 12 vein has been drifted for a length of 1400 feet north from the crosscut and of that length 515 feet, in four ore shoots, are ore grade. While No. 12 vein was being drifted drilling located No. 13 vein to the north and the main crosscut has been extended to intersect that vein but to date only 20 feet of drifting has been done on it and in that drifting the west wall of the vein has not yet been exposed. Four diamond drill holes have returned ore intersections from this vein, three at the south end and one at the north.

ORE TENOR: As in the Webber ore shoots, the transitions from ore vein to waste vein at the ends of the Huestis ore shoots is sharp and the average grade of the ore within any one shoot is generally uniform, with only minor erratic samples or lenses.

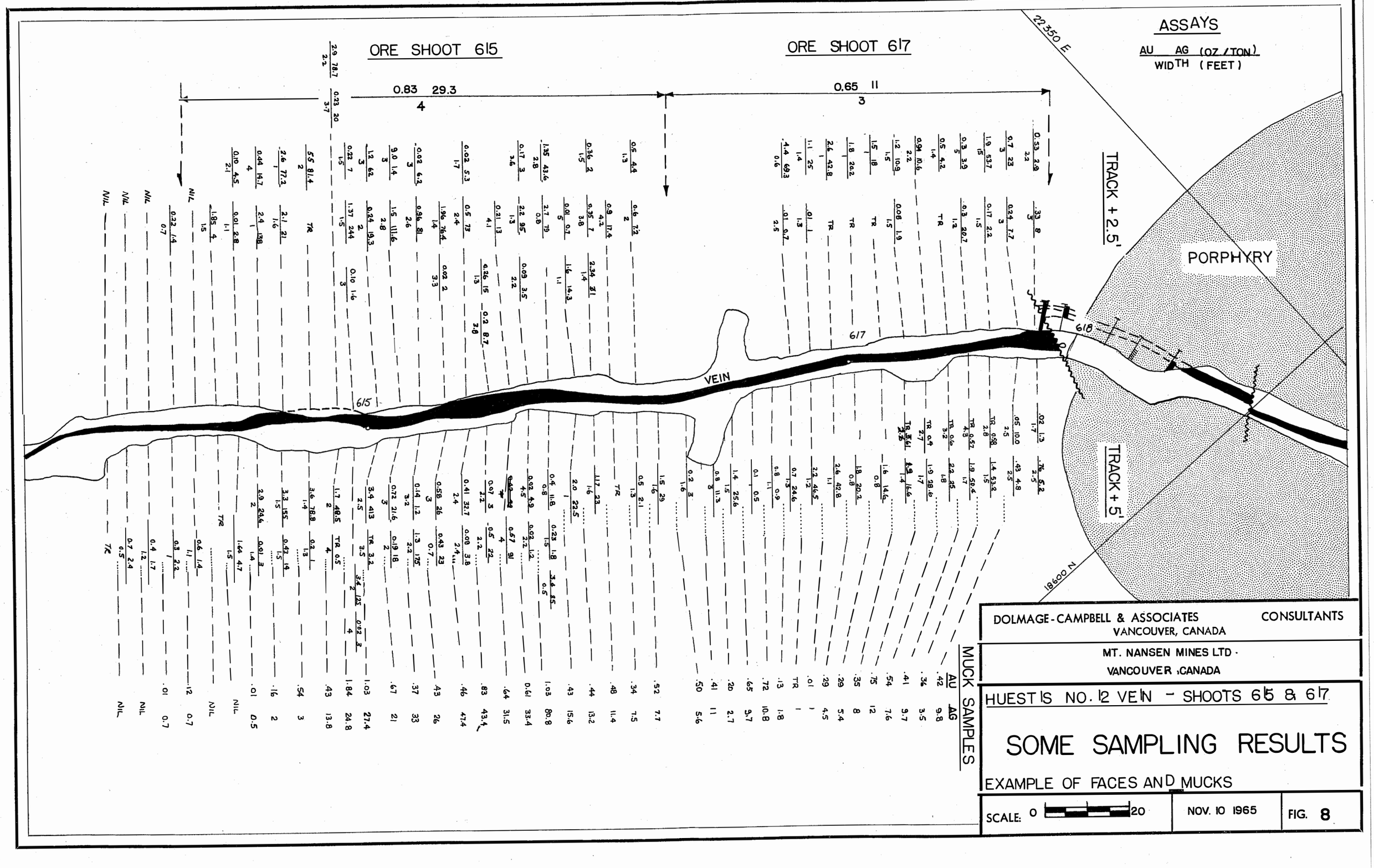
The gold content of the Huestis ore shoots exposed to date is somewhat higher than that in the Webber ore but the silver content is appreciably and consistently lower, at least in No. 12 vein.

ORE DEVELOPMENT: Most of the No. 12 vein ore has been well exposed by drifting but two ore shoots at the south end are indicated by crosscuts, partial drifts and by test holes. All of the ore on No. 13 vein has been indicated by underground diamond drill holes and by surface trenches.

The surface trenching of the Huestis veins is at right angles to the veins therefore extensive and complete surface sampling such as done on the Webber Zone, which was completely stripped, has not been possible on the Huestis Zones; nonetheless, ore grades are consistent in all the cross trenches above the ore sections exposed in the drift. One diamond drill hole, H9, was drilled from a crosscut to intersect No. 12 vein at a depth of 100 feet below the drift level beneath a rich ore shoot (615). Core recovery was poor in this down hole nevertheless what core was obtained graded 0.92 oz./t. Au and 3.6 oz./t. Ag across two feet, indicating the downward extension of the ore at least to a depth of 100 feet below the level.

Two diamond drill holes intersected a vein 75 feet west of No. 12 vein on the northwest side of the porphyry plug. One of these intersections returned sludge of ore grade, indicating that the vein should be further explored.

The No. 12 vein drift has reached the north end of the surface trenches therefore any further drifting in that direction will be blind, however, it will be proceeding toward the main porphyry plug and experience to date indicates that the best orebodies at both the Webber and the Huestis occur in the vein zones in the Yukon Group rocks near the margins of the porphyry bodies.



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HUESTIS NO. 12 VEIN - SHOOTS 615 & 617

SOME SAMPLING RESULTS

EXAMPLE OF FACES AND MUCKS

SCALE: 0 20 | NOV. 10 1965 | FIG. 8

ORE CONTROLS: The only ore control evidence thus far at the Huestis Mine is one of wallrock physical control in that the brittle rock of the porphyry has deflected and tightened the host fracture zone and the zone is therefore barren within the porphyry. Conversely, the vein zone is wide and rich within the metasedimentary rocks immediately adjacent to the porphyry.

There is also some evidence at the Huestis that the steeper portions of the veins are richer in gold and silver than are the more gently dipping portions.

HUESTIS ORE RESERVES

The surface development has not been as extensive at the Huestis as at the Webber; however, the sample results from the Huestis cross trenches do indicate that the ore persists from the drift to the surface. For the purposes of the ore reserve calculations given in this report the only ore categorized as "proven" is that 30 feet above and below the drift. Where ore grades occur in surface trenches above drifted ore shoots the intervening ore has been categorized as "probable". This somewhat presumptive projection has been encouraged by the consistency of the ore shoots between surface and underground at the Webber. A more tenuous projection has been made in the case of No. 13 vein where the vein between the underground drill intersections and the surface trenches has been categorized in this report as "drill indicated". Considering the persistence of ore shoots in the exposed parts of the Webber and Huestis vein zones the writer feels that this "drill indicated" ore on No. 13 vein should be considered as probable ore if estimates for guidance toward a mill are to be made.

Sampling procedures at the Huestis have been identical to those employed at the Webber and described in detail in this report under "Webber Ore Reserves". Similarly the methods of calculations have been the same for the Huestis as for the Webber. In the case of the Huestis ore shoots assay erratics have been even fewer than at the Webber but where they were encountered they were cut to 1 oz. Au and 100 oz. Ag.

One of the richest single sections of vein encountered on the Mount Nansen properties to date occurs on Huestis No. 12 vein in ore shoots 615 and 617, which are contiguous but of different grades and which lie on the southeast side of the porphyry body. For a length of 210 feet the vein is wide, straight and black with sulphides. From south to north the ore shoots are:

	Length (ft.)	Au (oz./t.)	Ag (oz./t.)	Av. Width (ft.)	Gross Value/t
615	110	.664	23.4	5	$57.40
617	100	.63	11	3	$38.70

Northwest of the porphyry body No. 12 vein is persistent but is only about one foot in width and contains only sub-ore grades. This long length of barren drift is the principal factor that produces the relatively low ore/waste vein length ratio of 37% on the Huestis No. 12 vein. (Versus 70% on the Webber Zones).

ORE RESERVE CALCULATION RESULTS:

Using the procedures described above and in the Webber section of the report the Huestis ore reserve estimate to date is as presented in Table 2 accompanying this report.

The total proven, probable and drill indicated reserves for the Huestis Zones are:

	Tons	Au (oz./t.)	Ag (oz./t.)	Width (ft.)
No. 12 vein	27845	0.62	14.3	3.7
No. 13 vein	18770	0.26	18.4	3
Total	46615	0.46	16	3.4

The gross value of this ore is $39.40 at present metal prices, ($37 per oz. Au, $1.40 per oz. Ag, Can.). Assuming total costs of $25 per ton the net profit potential at the Huestis would be about $15 per ton.

Most of this ore is categorized as "probable" but it can be readily verified and converted to proven ore by drifting and raising from existing headings. Similarly, the ore above the present adit level can be quickly prepared for stoping and production begun if desired.

Potential: As in the case of the Webber Zone, the only reason that the Huestis Zone has been explored at this location is that it crosses a ridge on which the depth of the over-

burden is only a few feet. Down the slopes of this ridge and north up the slopes of the Webber Ridge the perma-frost overburden increases in depth to over 15 feet, too excessive for practical stripping. Underground exploration to the south on the known veins on the present adit level is not possible because the level reaches the surface in that direction.

There is no geological reason to expect that any of the known Huestis Zones will not be as productive along strike in both directions, as well as down dip, as they have been in the adit level. In this drifting, essentially all on No. 12 vein, 37 percent is in ore, not as high a percentage as the Webber but still a higher than normal percentage for vein zone deposits. In addition, the areas east and west of the known vein zones have not yet been comprehensively explored for additional veins but limited drilling and trenching indicated that other veins do exist.

Thus the potential for finding additional ore reserves at the Huestis Mine is as yet unlimited in all directions. A presentation of a possible potential of the Huestis Zones is as follows:

1) Existing indicated tonnage ..... 46,600 tons
2) Twice the drift length to the north ..... 93,200 tons
3) Depth to 1000 feet of above tonnage .....700,000 tons
Total....839,800 tons

As in the case of the Webber, the above figures are presented solely to provide a target for development and investment with the full realization that further development could prove the projected tonnage figures to be much greater or less.

TABLE 2
HUESTIS ORE RESERVES

Tonnage factor = 11.5

Vein	Ore body	Width (ft.)	Length	Height	Grade Au	Grade Ag	$ Value	Tons	Category	Remarks
12	608	3	35	60	.68	9.7	39.40	545	Proven	In side of drift Probably wider
12	608	3	35	60	.68	9.7	39.40	545	Probable	Above & below drift
12	609	4	60	60	.48	6.6	27.05	1250	Probable	Crosscut: Above & below drift
12	610	3	55	60	.43	9	28.50	860	Probable	Crosscut & test holes Above & below drift
12	612	3	80	60	.62	14	42.60	1250	Proven	Drift. Could be wider TH5)
12	612	3	80	100	.62	14	42.60	2090	Probable	Below drift & above to surface
12	615	5	110	60	.664	23.4	57.40	2865	Proven	Drift
12	615	5	110	140	.664	23.4	57.40	6670	Probable	Taken to surface & to 30 ft. below Hole 9
12	617	3	100	60	.63	11	38.70	1565	Proven	Drift
12	617	3	100	200	.63	11	38.70	5210	Probable	Taken to surface & to 30 ft. below H9
12	628	2.5	75	60	.49	2.4	20.40	980	Proven	Drift
12	628	2.5	75	150	.49	2.4	20.40	2450	Probable	Taken to surface (120)
12B		5	60	60	.62	1.8	25.50	1565	Probable	Around drill hole H13
Totals										
No. 12 Vein		3.7			.63	15.2		7205	Proven	
		3.7			.61	13.9		20640	Probable	
				Total	.62	14.3		27845	Ave. width = 3.7 ft.	
13	X-cut	3	380	160	.29	19.8	37.00	15800	Drill Indicated	Drill Holes H1, H5, H12 Taken to surface (130')
	North	3	60	190	.20	10.8	25.85	2970	Drill Indicated	Drill Hole H15 Taken all way to surface
				Total	.26	18.4	35.45	18770	Ave. width = 3 ft.	
Huestis Totals			12 Vein		.63	15.2		7205	Proven	
			13 Vein		.44	16.1		39410	Probable and drill indicated	
				Total	.46	16	$39.40	46615	Ave. width = 3.4 ft.	

BROWN McDADE ZONES

The Brown McDade deposits are located on an eastern spur of the main Webber Ridge approximately 5000 feet east-northeast of the Huestis Mine. The workings consist of the underground workings, driven in 1946-47, and ten wide (15-50 ft.) bulldozer trenches which cross the vein zone at about 150-200 feet spacing for a vein length of 1600 feet. These trenches were excavated in 1964 by Peso Silver Mines Ltd. Of this 1600 feet about 650 feet lie beyond the south end of the underground workings. The underground workings consist of a crosscut adit 850 feet in length, a south drift approximately 650 feet in length, and a north drift about 500 feet in length. The Brown McDade vein zone strikes N 25°W and dips 50° to the west.

Recent remapping of the Brown-McDade workings has indicated that the original operators had perhaps not fully realized the complexity of the ore occurrences in this deposit with the result that the workings wander along, off and across the ore structures rather inconsistently. Since 1947 the price of silver has risen and the costs of operating in this area have declined, therefore the deposit looks more promising now. Peso Silver Mines Ltd., is presently conducting a reassessment program of the mine by underground drilling, following the remapping, resampling and the new surface trenching. This program is still in progress so that a comprehensive assessment of the ore deposit is not yet possible; however, sufficient new information has already been accumulated to provide a reasonable estimate of the general productivity and potential of the deposit, with the understanding that further information could alter the estimates in detail but not significantly in the gross aspects.

Because of the widespread clay alteration of the rock within and near the Brown-McDade vein zone diamond drill core recovery within the zone has been and is seldom more than 50 percent and often less than 20. This feature imposes restrictions on the assessment of drill results which probably had considerable bearing on the low estimates of the earlier operators.

WALLROCK GEOLOGY: The underground workings at Brown-McDade lie solely within two types of granitic rock, the most extensive of which is granodiorite. Porphyritic granite is exposed in the adit near the portal where it is in fault contact with the granodiorite that forms the country rock for the remainder of the mine. On the surface, 1500 feet south of the portal, the granitic rocks are in contact with, and presumably intrusive into, schists of the Precambrian Yukon Group. About 6000 feet north of the portal the granitic rocks are also in contact with, and probably intrusive into, massive, fresh basalts and diorite of the Mt. Nansen Group of Jurassic age.

At the mine the granodiorite is cut by two major fault or shear zones which trend about north northwest and dip 50°-70° to the west. The east fault, 150 feet in from the portal, is a gouge zone about 3 feet in width which is flanked on the hanging wall side by subsidiary fractures for a width of ten feet. Minor quartz and carbonate occur with this fault zone. The west fault, 500 feet further west, is the main vein zone and is a wide impressive structure. The granodiorite between these two faults is appreciably more fractured and silicified than is normal for this area.

The Brown-McDade Zone, west fault, is a complex zone of gouge planes and altered and sheared rock which ranges in width from 25 to 75 feet. The hanging wall rock is highly fractured, hematized and argillized for widths up to100 feet. South of the mine the zone enters the Yukon Group schists and pinches down abruptly, and the adjacent wallrock alterations become less pronounced. The zone has been traced to the north by an E-M survey for a distance of 6000 feet to the basalt-diorite rocks within which it becomes narrow and barren for a distance of 5500 feet. Emerging from these greenstones into granitic rocks once more the zone widens to at least 25 feet and is again extensively mineralized by hematite and quartz and is gold-bearing.

ORE STRUCTURE: (Brown-McDade Zone)—The Brown-McDade Zone exhibits a main footwall fault plane characterized by about 6 inches of dense gouge. This structure is persistent in the mine and consistent in attitude. It has been traced by the E-M survey and float trains for a distance of over three miles. These features, plus the attendant wide zone of wallrock alterations suggest that the structure is probably a major plumbing system with a promising depth potential.

The Brown-McDade Zone, as exposed underground, is divisible into three main parallel zones which merge with one another along their contacts. Adjacent to the main

footwall fault mentioned above is a **shear zone** approximately 15 feet in width comprised principally of hematized fault gauge in shears bounding highly sericitized and mylonitic rock slices. In rather sharp contact with this **shear zone** is the ore zone which is from 5 to 30 feet in width and which is comprised principally of gray, limonitic silica-sericite-barite replacement rock within which drusy cavities are common. Nests, veinlets, pods and disseminations of finely crystalline sulphide minerals occur dispersed rather erratically through this siliceous rock and consist principally of pyrite and arsenopyrite with minor chalcopyrite, galena and tetrahedrite. A number of grab samples of this typical replacement sulphide material averaged about 0.70 oz. Au and 8 oz. Ag. In some places underground the ore zone is separated from the shear zone by considerable thicknesses of alteration zone. The hanging wall of the ore zone is everywhere occupied by an **alteration zone** which is about 75 feet in horizontal width and is comprised of intensely altered and sheared wall rock. It is a replacement zone of fractured, maroon-coloured rock comprised principally of argillized feldspar, hematite and quartz within which relicts of granodiorite are recognizable.

In the surface cuts the zone is well exposed and corresponds generally to the foregoing description. Hard fresh rock is not exposed in the trenches, but the various components of the zone are recognizable as rubble of distinctive colours and textures. On the surface the ore zone veers off from the main footwall apparently in en echelon slices of hundreds of feet in length. At the north end of the surface exposures, between Trenches 01 and 00, the zone is displaced about 100 feet to the east. Exposures give no indication whether this deviation is caused by a cross fault or by a bend in the zone, but in either case the underground workings did not follow such a deflection and actually turned somewhat in the opposite direction, thus becoming considerably separated from the main structure.

The underground headings criss-cross nearly the entire Brown-McDade Zone with some of their length being in the "shear zone", some in the "ore zone" and much in the "alteration zone".

The ore material is essentially cherty replacement quartz within which the sulphides occur as replacement and as open-space fillings. Pyrite is the most widely distributed mineral within and beside the ore zones but is not related to the gold or silver values. Arsenopyrite is the oldest sulphide and is widespread within the ore zones where it is as abundant as the pyrite. Where it is finely divided it imparts the characteristic bluish tinge to the ore vein material. Sphalerite is less common in the vein zones and is generally accompanied by fine grained chalcopyrite. Stibnite is fairly common in local concentrations. The precious metals are spatially related to the arsenopyrite and occur as native gold, andorite, freibergite and ruby silver, the last three being antimony sulphosalts.

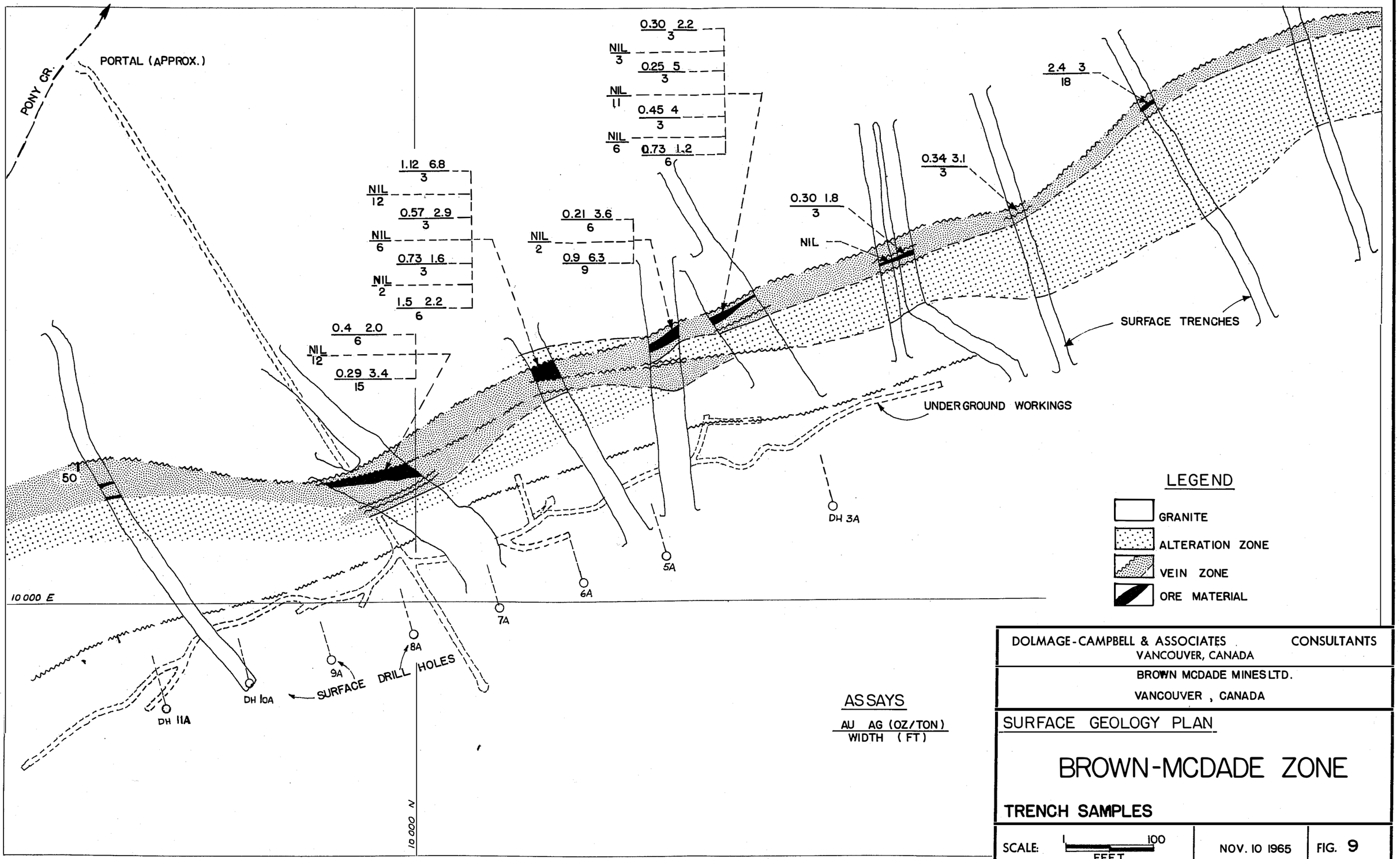
ORE OCCURRENCES

Remapping of the Brown-McDade workings has revealed a series of sinuous en echelon vein-like quartz replacement bodies occurring in two general sites, one along the main football fault plane, and the other along the zone 20 to 40 feet in the hanging wall. These bodies average 200-400 feet in length and 5 to 15 feet in width and dip parallel to the footwall fault. At their ends along strike individual bodies tend to pinch out rather abruptly or turn sharply into a nearby body. They are all comprised of cherty quartz, brecciated wallrock and are generally vuggy and leached. All are heavily pyritic but only some are appreciably mineralized with arsenopyrite and the sulphosalts.

Underground drifts and drilling have indicated a total strike length of nearly 2000 feet of these vein zones of which about 600 feet have been wholly or partially exposed by drifts and crosscuts. The remaining 1200 feet of zones are indicated by sparse drilling, some crosscuts and by mapping, and all require further investigation by further drilling and driftings. Of the 600 feet of zones that have been exposed by drifts 440 feet are of ore grade, occurring in four shoots three of which range in length from 120 to 155 feet and all of which range in width from 5 to 8 feet.

The ore-bearing sections of the vein zones are not everywhere clearly apparent without careful examination and sampling, therefore stoping of these bodies will require close geological control with considerable guidance from drill holes.

ORE TENOR: The Brown-McDade ore is much the same as the Webber and Huestis ores in mineralogy but decidedly different in grade. The gold content tends to be higher than the Webber-Huestis ores but the silver content much lower. Gold values of weighted



ASSAYS

AU AG (OZ/TON)
WIDTH (FT)

LEGEND

- GRANITE
- ALTERATION ZONE
- VEIN ZONE
- ORE MATERIAL

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SURFACE GEOLOGY PLAN

BROWN-MCDADE ZONE

TRENCH SAMPLES

SCALE: 1 100 FEET | NOV. 10 1965 | FIG. 9

LEGEND

- ORE VEIN
- VEIN(ORE) OFF DRIFT.
- ALTERATION ZONE
- GRANITE
- GOUGE PLANE
- POSSIBLE & LOW GRADE ORE
- VEIN ZONE
- DRILL HOLES

ASSAYS AU AG (OZ/TON) / WIDTH FEET

10200 N

10000 E

TO PORTAL

114

70

116

2N ORE SHOOT

0.46 9.5 / 5

1N ORE SHOOT

0.67 5.1 / 8'

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VANCOUVER, CANADA

BROWN-MCDADE MINES LTD.
VANCOUVER, CANADA

UNDERGROUND PLAN

EXAMPLE
BROWN-MCDADE SHOOTS

AT MAIN CROSSCUT

SCALE: 0 20 FEET

NOV. 10 1965

FIG. 10

samples at Brown McDade range from 0.40 to over 2.0 ounces/ton whereas the silver values are consistently 4 to 10 ounces/ton. The average values of the ore proven underground to date is 0.61 oz./ton Au and 5.4 oz./ton Ag across an average width of 6.7 feet.

Compared to the other Mt. Nansen properties the Brown-McDade orebodies, as exposed to date, are low grade and decidedly marginal if considered by themselves; however, they have a very large tonnage potential and if they are considered as feed to a mill servicing all the Mt. Nansen properties they have promise of considerable profit. Also, more definitive development of the orebodies may well appreciably increase the grade of the Brown-McDade orebodies.

ORE DEVELOPMENT: Because of the fact that the orebodies crisscross the Brown-McDade drift with much of their widths in the wall and because there is no connection between the drift and the surface trenches it is difficult to properly assess the value of the orebodies. The present program of underground drilling is an attempt to partly resolve this difficulty but ultimately proper answers can only be obtained by more detailed drifting and selected raising. Two good orebodies, 1N and 2N, have been indicated underground north of the crosscut but surface stripping does not extend north of the crosscut so there is no correlation possible for the upward extensions of these bodies. Similarly, an extremely high grade wide section of ore is exposed in Trench No. 8, 400 feet south of the south drift face, but there is no depth correlation possible for it to date.

Thus, most of the information presently available at Brown-McDade is fragmentary yet viewed as a whole it suggests large tonnages of mill feed ore.

BROWN McDADE ORE RESERVES

Because of the fragmentary nature of the available data at Brown-McDade it is most premature to calculate a meaningful reserve for the deposit. Some excellent surface sampling results cannot be correlated with underground because they are beyond the underground workings. Drilling has been sparse, erratically located and all core recovery has been very poor so that drill results, both good and bad, are difficult to assess. Underground, because the drift rarely entirely exposes any orebody, grades have to be calculated from mixtures of new wall samples and old back samples, some of which include waste wallrock.

With appreciation of the above limitations a preliminary estimate of ore reserves at Brown-McDade has been made to serve as a guide to the weighting of this property relative to the Webber and Huestis. Much more work is required to properly assess the Brown-McDade deposits but results to date certainly indicate that such work is very definitely warranted.

RESULTS:

Several orebodies have been well exposed and sampled in the drift and have been intersected within 40 feet above and below the drift by limited drilling. These are considered here to be "proven" ore. Where ore has been partially outlined underground by crosscuts and drill holes it is considered "probable". A distance of 30 vertical feet has been taken on either side of the level for tonnage calculations. The following ore is thus considered as proven and probable.

PROVEN AND PROBABLE

Orebody	Tons	Width (ft.)	Ag (oz./t.)	Ag (oz./t.)	Category
1N	7450	8	0.67	5.1	Proven
2N	10430	8	0.68	3.7	Probable
2N	6100	5	0.46	9.5	Probable
3N	910	5	1.10	4.2	Probable
1S	3650	5	0.50	5.0	Proven
1S	3650	5	0.50	5.0	Probable
Total	32190 tons		0.61 Au	5.4 Ag	$\frac{\text{ave}}{\text{width}} = 6.7$ ft.

The gross value of this ore is $30 at present metal prices (Can.)

In addition to the above ore, surface sampling, scattered drill holes and partial underground exposures have indicated the following ore which can be categorized as probable to possible:

			INDICATED			
Orebody	**Tons**	**Width**	**Au**	**Ag**	**Location**	**Category**
1N	2435	8	0.36	4.3	Surface	Probable
1N	6050	8	0.51	4.7	Drift to surface	Probable
2N	10000	5			Drift to surface	Possible
3N	2000	5			Drift to surface	Possible
1S	3810	5	1.04	3.2	Surface	Probable
1S	7820	5	0.77	4.1	Drift to surface	Probable
2S	1700	7	0.38	7.0	Drift	Probable
2S	4570	5	0.75	4.5	Surface trenches	Possible & Probable
2S	15000	5			Drift to surface	Possible
3S	4560	15	2.40	3	Surface	Probable
3S	20000				Drift to surface	Possible
Total	77945 tons					

Thus, at Brown-McDade approximately 110,000 tons of ore are either proven or indicated within the immediate limits of the present workings. The gross value of the ore would appear to be about $30 per ton, @ $37 Au and $1.40 Ag, and could be higher, depending on more definitive development. With so many potential ore zones still to be explored between the mine workings and the surface the above figure could possibly be increased as much as 50 percent.

Potential: The early operators drilled two holes to intersect the Brown-McDade ore zone at depth below the level: Hole 102 intersected what projects as 1N orebody at 100 feet vertically below the level and returned an assay of 0.70 oz./t. Au and 2.3 oz./t. Ag across 10 feet from 65% core recovery. (Hole 103 intersected the zone 60 feet deeper but returned only 15% core and no values); Hole 101 intersected the zone and what is probably 2N orebody at a depth of 150 feet vertically below the level but returned only 25% core for a width of 15 feet. One six inch piece of this core assayed 0.24 oz./t. Au and 4.0 oz./t. Ag and the remainder, apparently rubble, ran trace. From these results it can be deduced that the ore structure continues at least 200 feet below the level and contains some values to that depth.

From a geological standpoint the extent of the Brown-McDade ore has not been limited along strike or at depth, in fact each of these directions holds excellent potential for productive exploration. Much exploration can be done by extending the present workings and raising from them. If twice the present drift length produces similar ore reserves as those indicated in the existing workings then a total of 200 to 400,000 tons would be realized in the deposit. If this is projected to 1000 feet of depth the potential would be in the order of two million tons. Considering the great length (2 miles) of unexplored Brown-McDade Vein zone on the Mt. Nansen property this potential may well be easily realized in one dimension or another.

METALLURGY

The ores at Mt. Nansen can be considered as somewhat complex in that the gold is associated with arsenopyrite and the silver is contained in antimony sulpho-salts. In 1946 the early operators of Brown-McDade made limited metallurgical tests on the ore from that mine and experienced some difficulty obtaining good recovery. To resolve the problems of recovery Peso Silver Mines Ltd., have had nearly completed metallurgical tests run on a one ton bulk sample of ore from the Webber raise and are presently having tests completed on a 200 pound bulk sample from the Huestis drift. Since there is very little difference mineralogically between all of the Mt. Nansen ores, the primary difference being one of variations in the gold/silver ratio, it is reasonable to assume that the metallurgy of the ores will be similar. The main differences in the metallurgical treatment will probably be encountered in ores that are oxidized and leached, such as at the Webber north of the raise and at the Brown McDade.

Metallurgical tests are continuing on the Huestis ore and will be started on the Brown-McDade, in the interim the results of the first Webber ore tests are complete and are available for presentation here. The testing is being done by Britton Research Laboratories of Vancouver and all tests are fully documented in detail in reports from that firm. These detailed reports are available from Peso Silver Mines Ltd., and only the salient features are presented here.

PROCESS:

The sample tested from the Webber vein was oxidized and assayed:

Gold	0.445	oz./t.	Antimony	1.29%
Silver	32.6	oz./t.	Arsenic	2.52%
Lead	2.06	%	Iron	5.96%
Zinc	0.15	%	Sulphur	1.52%
Copper	0.06	%		

It has been found that a process of:

1) Grinding the ore to 63% minus 200 mesh
2) Preaerating in the presence of lime
3) Cyaniding with lime and sodium cyanide for 72 hours
4) Cyaniding again for 24 hours
5) Flotation

produces an overall recovery of **83%** of the gold and **90%** of the silver. Mr. Britton states that "The results could almost certainly be further improved by additional research on the problem."

The sample tested from the Huestis vein is not as oxidized as that from the Webber and assays:

Gold	0.70	oz./t	Antimony	0.29%
Silver	15.8	oz./t.	Arsenic	3.06%
Lead	1.38	%	Iron	8.07%
Zinc	1.82	%	Suphur	7.52%
Copper	0.11			

Presumably the same general process will apply for this ore with possible variations because of the less oxidized nature of the ore. It is clear that most of the ore to be mined from the deposits will be unoxidized since oxidation is restricted to about 100 feet below surface.

It should be noted in the above assays that the lead content of the ore ranges between one and two percent. This metal would probably be marketable in the concentrate but for the purpose of convenient calculations in this report it has not been included in the value of the ores. At present metal prices 1.50% lead is equivalent to about $4.00 per ton. This revenue would be offset by reducing the precious metal revenue of the gross ore by 17% and 10% for the gold and silver respectively, assuming 83% and 90% recoveries. (For the Mt. Nansen grades the decrease in gold would be about $2.50 per ton and the silver $2.00 per ton, roughly equivalent to the lead value in the ore.) Thus, until more definitive metallurgical results are established the writer has used the gross values of the gold and silver only, without recovery decrease, to provide a working gross value of the deposits.

It is most likely that both the gold and silver recovery can be increased by further testing and actual milling, or roasting if necessary, in which case extra revenue can then be calculated for the ore using the marketable lead content.

CONCENTRATE: The concentrate derived from the presently proposed milling process is approximately one quarter of the feed by weight. In the event that this concentrate is to be shipped without further reduction $2.00 per ton have been applied to the costs per ton of ore listed under "Costs at Mt. Nansen" in the Introduction of this report. Similarly, to allow for possible complexities in the milling of this ore an extra $1.00 per ton has been added to the milling costs over and above what would be considered normal milling costs in this area.

The foregoing information on the metallurgy of the Mt. Nansen ores has been derived from testing still in progress and therefore it should be considered as liable to change as the tests reach completion.

MT. NANSEN CONCLUSIONS

Underground and surface exploration results on the Mt. Nansen properties have proven the existence of appreciable tonnages of profitable gold-silver ore in several major vein zones. The amounts and grades of ore now categorized as proven and probable by definitive underground and surface development are as follows:

Mine	Tonnage	Au (oz./t.)	Ag (oz./t.)	Ave. Width (ft.)	Gross Value
WEBBER	73,500	0.39	22.3	4	$45.60
HUESTIS	46,600	0.46	16.	3.4	39.40
BROWN-McDADE	32,200	0.61	5.4	6.7	30.00
	152,300 tons	0.46	16.8		$40.50

To this should be added 78,800 tons at Brown-McDade that have been indicated and partially developed by drilling and surface stripping but which need further work to properly assess for grade. Thus the Mt. Nansen properties have approximately **230,000 tons** of reasonably assured ore.

POTENTIAL: The potential of the property has not yet been determined except that cursory prospecting has revealed the existence of at least four other ore-bearing vein structures besides the Webber, Huestis and Brown-McDade. Geological prospecting has also revealed more than a mile of the Brown-McDade and the Huestis Zones that have yet to be explored and has indicated that all zones probably extend the full length of the property, several miles. The depth potential has been tested to about 300 feet below surface on the Webber, Huestis and Brown-McDade by one diamond drill hole each and in each case confirmed the existence of ore on the desired structures. A gold property on a similar vein zone ten miles north, the Discovery Mines property, has been proven to be orebearing to a depth of 900 feet and has not been delimited. To provide a reasonable guide for assessing a potential for the Mt. Nansen deposits the writer has taken the present indicated reserves and assumed that twice as much drifting will double the reserves in each property, and also that the ore shoots or others on the structures will extend to a depth of 1000 feet. These assumptions are considered reasonable in view of the fact that great lengths of the vein zones have yet to be explored and that other known vein zones have also yet to be explored, so that, if some ore on the known zones does not extend to the depth of 1000 feet probably other zones will produce ore to take its place. With these assumptions a reasonable potential for the property would be at least **three million tons.** This does not necessarily represent the ultimate potential of course since the ore could extend to several thousands of feet in depth and the lateral extent of the known ore zones could be more productive than the parts presently explored.

ECONOMICS: Preliminary metallurgical tests on the Webber ore indicate that a recovery of 80-85% of the gold and 90% of the silver are reasonable to expect for the Mt. Nansen ores. The value of the loss in precious metals in the milling is approximately equivalent to the value of the lead in the ores, which has not been included in the gross values of the ore presented here.

Fairly detailed cost studies on a mining operation at Mt. Nansen indicates that an estimated total cost figure of $25.00 per ton is conservative and that $20 per ton could probably be achieved. Thus, with the calculated gross value of $40 per ton for all of the Mt. Nansen ores, it should be possible to realize a profit of about $15 per ton on this property.

With 150,000 tons fairly well proven and another 80,000 tons well indicated, plus the obvious, an so far unlimited, potential of the ore zones on the Mt. Nansen property, it is evident that enough reserves are available to seriously consider putting the property into production.

The optimum size of mill would have to be determined by further development work but there is presently indicated enough reserves to support a 200 ton/day mill for at least three years. With not much more development work on the immediate workings of Webber, Huestis and Brown McDade this reserve grade could be easily doubled. With intense exploration beyond these areas and on other zones the reserve figure could well be increased ten-fold. At 200 tons per day of the grade indicated to date the operation would realize a net profit of about $1 million per year.

In view of the early state of the development, plus the promising potential, it would appear that a mill of 200 tons per day minimum would be warranted now but that it should be so designed as to be amenable to ready expansion to 500 tons per day as reserves may indicate.

RECOMMENDATIONS:

In view of the excellent results of the development at Mt. Nansen to date, plus the potential still to be explored, the writer recommends the following general program of development and further exploration on the property:

Drift extensions (Webber, Huestis, Brown-McDade)	$ 400,000
Raises (Webber, Huestis, Brown-McDade)	$ 300,000
Stope Preparation (Webber, Huestis, Brown-McDade)	$ 100,000
Exploration drilling, underground and surface	$ 200,000
Total	$1,000,000

To this would be added:

Mill, plant and townsite construction (200 t/d)	$1,000,000
Total	$2,000,000

Within a year the above work should be near completion and a new phase of exploration and development should be started to free the existing workings for production and to increase reserves to depth. This would best be accomplished by two new low-level adits; one on the Huestis down the valley of Dome Creek east of the present adit, and the other across the same valley into the Brown-McDade. (The mill should be located down Dome Creek near Victoria Creek where water is assured all year). The low level Huestis adit should be driven through the Huestis zones to the Webber and serve as a main haulage for those deposits as well as an exploration site for other veins. The costs of this work would be:

Huestis Adit (6000 ft. @ $60.00)	$360,000
Attendant raises	$120,000
Drilling	$ 50,000
Total	$530,000
Brown McDade Adit (300 ft. @ $60.00)	$180,000
Raises	$ 60,000
Drilling	$ 30,000
Total	$270,000
GRAND TOTAL	$800,000

CASH FLOW:

With the beginning of production the operation should realize a net profit of $1 million per year, this of course will be tax free for the first three years. Considering the above preproduction costs, plus the costs already expended on the properties by Peso Silver Mines Ltd., it would appear that the property could be earning a profit on capital within a few years, depending on write-off rates etc.

In view of the tax structure for new mines in Canada it may not pay to write off capital until after the tax free period. Also, it may be profitable to bring Brown-McDade into production at a later date and claim an additional tax free period for it as a new mine. This procedure has precedent and is acceptable.

From his knowledge of the geology of the Mt. Nansen area and the features of each of the deposits explored to date the writer is most optimistic about the potential of this property and strongly recommends the development of it toward production.

PART TWO

PESO SILVER MINES LTD.

MAYO DISTRICT PROPERTIES, Y.T.

INTRODUCTION

Peso Silver Mines Ltd. owns or has controlling interest in 532 mineral claims in the Mayo area of the Yukon. These claims are contained in twenty groups which are distributed along bands of quartzites west and north of Keno Hill and Galena Hill. The proven, rich silver-lead orebodies presently being mined on Keno and Galena Hills by United Keno Hill Mines Ltd. comprise the primary type of targets for exploration by Peso Silver Mines in the Mayo District; however, increased exploration to the west of Keno Hill has indicated that economic silver deposits occur in somewhat different structural environments than those at Keno therefore the target for silver exploration has been broadened from limited high-grade galena-silver deposits only to include possible lower grade but more continuous deposits. With this realization, that the type of ore deposits in the Mayo District may be more diverse than heretofore anticipated, the emphasis on the work of Peso Silver Mines in the district has been directed toward accumulating enough ore of all grades, on various properties, to warrant the construction of a mill by Peso Silver Mines. (An alternative proposal under the same conditions would be to approach United Keno Hill and offer that company a proposition of expanding their concentrator to take any ore Peso may develop in the district). A secondary purpose in the exploration by Peso Silver Mines in the Mayo District has been to acquire property in those areas that are geologically most promising, the purpose being to accumulate worthwhile holdings in one of the world's richest silver mining camps, in anticipation of the almost certain depletion of the world's silver resources and the consequent rise in price of the metal.

Because of this dual purpose for exploration, Peso Silver now controls in the Mayo District: 1) a large number of claim groups that have been staked in geologically and geochemically favourable areas but which have not been otherwise explored, and 2) a number of other properties on which considerable underground work has been done and on which silver ore has been proven. Most of these properties require, and warrant, further development work to properly assess their potential and to determine if any one or all of them can support a mill.

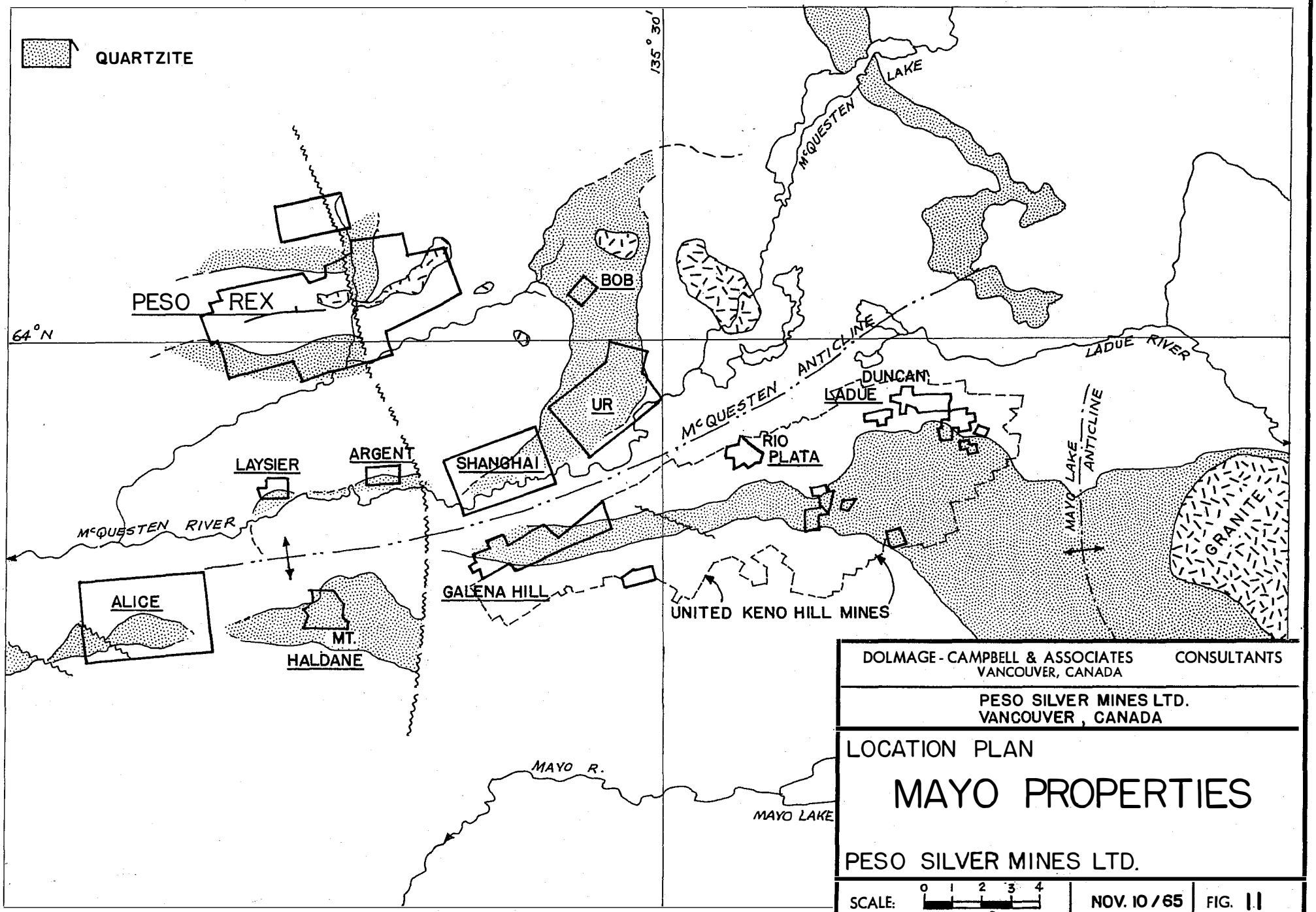
In view of the fact that geology has controlled the location of the Mayo properties, the following discussion presents an outline of the general geology of the area to provide a setting for more detailed discussion of the individual properties.

MAYO GEOLOGY:

An area roughly rectangular in shape surrounding Mayo is underlain by a series of rock formations known as the Yukon Group, believed to be Precambrian or later in age, the oldest rocks in the Yukon. The area of these rocks around Mayo is bounded 40 miles west of Mayo by the Tintina Fault Trench, down which flows the Stewart River, and 30 miles south of Mayo by an east west contact of overlying Carboniferous formations, and 70 miles east of Mayo by a northwest-trending contact of Paleozoic sedimentary rocks, and finally, 40 miles north of Mayo by an east-west contact by unmetamorphosed sedimentary formations, (Fig. 1). Keno Hill is located in the northeast corner of this rectangular area and all of the known orebodies and prospects are within 20-30 miles of Keno, principally to the northwest.

The Yukon Group is comprised of metamorphosed stratified rocks which are principally quartzites and schists with minor limestones. These rocks are repetively interlayered with one another and include schistose phases of quartzites and quartzitic phases of schists as well as many varieties of schists from graphitic to gneissic. All of these rocks have been intruded by basic dikes and sills (greenstones) by later granitic bodies and finally by minor rhyolite and lamprophyre dikes. Of the above-described rocks, the quartzites, greenstones and the granitic intrusives are structurally competent and sustain prominent fracture-fault zones, whereas the remaining rocks are incompetent and do not sustain such fracture zones.

In the Mayo District all of the presently mined silver-lead deposits occur within or close to a major belt of quartzites that strikes generally northwestward along the northeast side of the rectangular exposure of Yukon Group rocks. This quartzite belt, termed the Central Quartzite, is made up of a number of sequences of quartzites and quartzitic schists interlayered with sequences of schists. The Dominion Government Geologist, R. W. Boyle has calculated the Central Quartzite sequence to be approximately 2400 feet in stratigraphic thickness with about 800 feet of this being comprised



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PESO SILVER MINES LTD.
VANCOUVER, CANADA

LOCATION PLAN

MAYO PROPERTIES

PESO SILVER MINES LTD.

SCALE: 0 1 2 3 4 MILES | NOV. 10/65 | FIG. 11

of interbedded schistose material confined principally to the top and bottom of the sequence. (G.S.C. Paper 57-1). Above and below the Central Quartzite the rock sequences consist predominantly of schists and are known as the Upper Schist and Lower Schist formations respectively. Quartzite beds or sequences, occurring within these schist formations attain thicknesses up to 100 feet so that environments favourable to vein-type ore deposits do exist in these otherwise less favourable formations.

Within the Central Quartzite formation as well as the adjacent schist formations are numerous discontinuous sill-like bodies of basic igneous rock termed "greenstone". These bodies are interpreted to be boudin relicts formed by the dislocation of sills and/or flows during metamorphism and deformation of the formations. Because of their good competency the greenstone bodies tend to sustain fracture systems favourable for deposition of silver-lead ores.

STRUCTURE: The principal structure in the area is a major anticline whose axis trends S15° E from the Davidson Range, eight miles north of Keno, across the Patterson Range to the east end of Mayo Lake, ten miles southeast of Keno. This regional structure has been locally deformed by a number of cross folds and faults which trend S65° W. The principal components of these cross-structures are the McQueston Anticline, which trends westward down the McQueston River valley from the Davidson Range, and the system of vein-faults which occur on the south flank of the McQueston Anticline and which are the ore structures on Keno and Galena hills.

Late faults with vertical displacements up to hundreds of feet cut all the formations in the area and trend northwest to northeastward. They both displace and merge with the ore-bearing fracture systems in the district, most of which trend northeastward.

ORE OCCURRENCES:

In the Galena Hill-Keno Hill silver-lead deposits all productive orebodies occur as fracture fillings within vein zones which lie within the major quartzite and greenstone bands of the Central Quartzite formation. The vein zones strike northeastward and dip to the southeast at about 65°. Individual veins range in width from one to ten feet, but zones of multiple veins and/or replaced breccia zones occur to widths as great as 70 feet. The 30 veins exposed along the fifteen miles of quartzites on Keno and Galena hills are apparently branches and faulted segments of about four main vein zones. These vein zones are broken by many southeast and southwestward striking faults which have right hand horizontal displacement up to 1000 feet. The vein zones themselves have faulted the rocks they traverse in left hand displacements. Within schists and thin-bedded quartzites the vein-fault zones tend to narrow down sharply to tight slips, or breccia faults and in many places become gouge-filled faults a few inches in width.

Most of the orebodies occur at or near junctions of vein structures or next to a contact between competent and incompetent rock. The vein zones invariably widen out within the competent rock (quartzite) near a schist contact. Some vein zones have been traced by drifting and drilling for lengths exceeding 6000 feet, with orebodies occupying approximately 10% of the strike of any one vein on any one level and practically all of that 10% being within the Central Quartzite.

Most of the orebody portions of the vein zones are comprised of quartz and/or siderite and/or quartzite breccia along with lenses, veins and/or disseminations of ore minerals, i.e. galena, sphalerite, freibergite and pyrite. Large masses of solid metallic minerals form local portions of the orebodies but they are not commonly extensive when the entire vein system is considered. The principal silver-bearing mineral in the district in freibergite (argentiferous tetrahedrite), but at the Keno and Galena hill deposits the freibergite is generally intimately intermixed with galena therefore the mill concentrates are mostly galena which imposes a heavy burden in the cost of shipping. In other parts of the district the freibergite occurs with less galena or with jamesonite, thus concentrating to a higher grade (by weight) shipping product.

PRODUCTION—MAYO DISTRICT

Production began on the Silver King vein on the western flank of Galena Hill in about 1913. Veins were discovered on Keno Hill in 1919 and during the 1920's other veins were exposed, but only where overburden was shallow because all work at that time was done by hand in the permafrost, a slow difficult job. Between 1921 and 1942

most of the mining was done on orebodies that had been found on the surface, but due to high costs and apprehensions that the ore was shallow, no mining was done below about the 400 feet depth and only a slight amount of exploration and development was done. The camp was closed in 1942 because of the war and because of depletion of near-surface ores.

The camp reopened as a salvage operation in 1946 and the major amount of production from the district has been achieved since 1948 with the mining extending to deeper levels. Recently transportation and equipment costs as well as metal prices have improved enabling lower grades of ore to be mined. A summary record of production from Galena and Keno hills is as follows:

	Silver oz.	Lead lb.	Zinc lb.	Cadmium lb.
	(All units in millions)			
1) Independents	2	4		
2) Keno Hill Ltd. Yukon Gold (1921-24)	2	4		
3) Treadwell Yukon Corp. (1922-42)	44.3	96		
4) United Keno Hill (1946-63)	84.2	305.3	233	3.06
TOTALS	132.5	409.3	233	3.06

At present metal prices: (Ag $1.40/oz., Pb, Zn 15¢/lb. Cd $1.70/lb.), the value of the above production is approximately $287 million (Can.). Considering that most of this has been attained since 1951, it is evident that the Mayo District comprises one of the world's major silver camps. In view of the fact that the surrounding favourable area has remained unexplored because of difficulties imposed by permafrost, etc., it comprises one of the best targets available in the search for new silver mines.

EXPLORATION BY PESO SILVER MINES LTD.

Within the framework of well-established characteristics of Keno-Galena hills silver-lead ore deposits described above, Peso Silver Mines Ltd. has directed its exploration to those areas wherein the Central Quartzite formations are deformed by folding and faulting and where some traces of ore grade silver mineralization occur. In the latter case the occurrences may be as float or as anomalous geochemical contents of lead-zinc in soil or in creek silts. Most of the most promising prospects are located on the northwest flank of the McQueston Anticline since the southwest flank is almost entirely covered by United Keno Hill claims.

The Peso properties in the Mayo area will now be described either individually, or as members of groups, in order from those with the most work done on them to those with the least.

REFERENCES:

(1) "Yukon Territory," H. S. Bostock, G.S.C. Mem. 284, 1957.
(2) Geology & Geochemistry of Keno Hill, etc., R. W. Boyle, G.S.C. Paper 55-30, 1956.

PESO SILVER MINES (REX)

About 20 miles northwest of Elsa Mine on Galena Hill near Haggart Creek, is an area of mixed quartzitic and schistose rocks intruded by granitic sills. This belt of quartzites is not connected with Keno Hill Quartzite formation, which lies to the east and south, but it may represent an upfolded window of that formation. In the central, schistose, portion of this area at least two major shear zones cut the formations. These zones are extensively mineralized with quartz, carbonate, pyrite, jamesonite and minor galena over widths ranging from three feet to thirty feet. The westernmost zone is known as No. 1 Vein and the easternmost is termed the Rex Vein. Both vein zones have been explored by one adit level each and have been locally stripped and sampled on the surface. The area is covered by a total of 551 mineral claims separated into two groups of 519 and 32 claims each (Fig. 15). This property is the original Peso Silver Mines Ltd. holding in the Yukon. The southeastern portion of the Peso block shown on Fig. 15 is comprised of approximately 61 claims staked by Rio Plata Silver Mines Ltd., 37% of which is owned by Peso Silver Mines Ltd.

Both No. 1 and Rex Vein zones strike east to 20° north of east and dip 60° to 45° to the north. No. 1 Zone is located on the east side of Secret Creek and the Rex Zone is located about two miles to the east and south, on the west side of Haggart Creek. The

two zones probably represent separate near-parallel mineralized fault zones. The principal country rock in the vicinity of the workings is schist, but sequences of quartzite up to 100 feet in thickness are not uncommon. A drift adit about 600 feet in length was driven on No. 1 Vein from the Secret Creek slope and a system of drifts totalling 2000 feet was driven on the Rex Vein from a crosscut adit on the Haggart Creek slope. The underground development in both areas exposed lower grade ore than anticipated from surface exposures and in the case of the Rex, more complex geology than expected; however, in both locations considerable tonnages of low-grade ore have been proven and in neither location has the indicated ore potential been comprehensively explored. Much more work is required on this property to truly evaluate its worth.

Each vein zone is described separately below, followed by a summary of the ore reserves and potential. Detailed plans and sections of all surface and underground workings of Rex and No. 1 Vein are available, but in order to decrease the bulk of this report they have not been included, in their place the writer has attempted to present sufficient descriptions to properly represent the established facts. All of the surface and underground workings have been properly and thoroughly sampled wherever exposures permit and the results of these samples have been weighted and averaged by the writer to obtain the figures presented in this report. All assay plans and calculations are available for checking. The writer has examined all of the surface exposures on the property and has mapped much of the Rex underground workings. He has not examined the drift on No. 1 Vein.

PESO REX

This vein zone was stripped by longitudinal and cross trenches for a length of 1400 feet. For most of this length the zone was exposed as a single highly oxidized mineralized shear up to 20 feet in width, but for a length of 400 feet at the east end of the exposures the zone divides into three main branches which enclose a lense-shaped area of branching veins and shears known as the E-Zone. Scattered lenses of good grade silver ore occur in this complex of veins. To the west of the E-Zone, 500 feet from the western junction of the branches, surface stripping and sampling exposed a section of the main Rex zone 270 feet in length that assays 32.2 oz. silver/ton and 3.6% lead per ton across an average width of 7 feet. This was termed the B-Zone. Fifteen surface diamond drill holes were drilled between the E and B zones and three of the holes intersected fair silver values within 100 feet of the surface directly below the B-Zone. Four other holes returned marginal values slightly to the east and at depths between 100 and 200 feet below surface. The decision to explore the B-Zone underground was made and in 1963-64 a cross cut was driven to intersect the vein directly beneath B—Zone. Unfortunately the operators at that time chose to drive the level at a depth of 350 feef beneath the surface, which, on an unexplored structure, is too great a depth from known conditions. A great deal of subsequent, costly underground drifting and crosscutting have revealed that the branching portion of the Rex Zone, known as E—Zone on the surface, rakes down to the west along the structure at about 20° angle and the crosscut intersected this maze of branching veins and shears exactly in the middle. The large amount of drifting and diamond drilling, as well as long raises, that was necessary to sort out and evaluate the complex structure encountered underground imposed a severe financial burden on the company with the result that when the decision had to be made whether to continue to spend money on the Rex or divert it to Mt. Nansen, where results of development were more encouraging, the work on the Rex was ceased and the deposit has not yet been properly evaluated. Results obtained to date have been fair and the deposit has good potential which should be further explored. A summary description of the deposit follows:

STRUCTURE:

The lense of veins termed the E-Zone, as explored underground, is comprised of major hanging wall and footwall mineralized sinuous shear zones both of which dip northward at 30°-60° and both of which range up to 10 feet in width. These two vein zones are 220 feet apart at the widest part of the lens where the main crosscut intersected the structure. Between them lie at least four branching subsidiary vein zones of similar character and dip to the main zones but generally much narrower and less mineralized. The western junction of the hanging wall and footwall zones is exposed underground 500 feet west of the crosscut and the main vein structure has been drifted a length of 220 feet further west. The eastern junction is about 500 feet east of the crosscut but is not exposed underground because of displacement by crossfaulting.

Drill holes from the crosscut intersected the structures below the level and two raises, the 74 Raise on the hanging wall zone and the 112 Raise on the footwall zone, exposed the vein zones above the level. These exposures indicate that the lens of vein splits is raking at a low angle to the west and comes down from the E-Zone at the eastern surface exposures. Also, and most important, the ore shoots on the veins also apparently rake to the west and the downward extention of the B-Zone is probably about 200 feet west of the present westernmost drift face on the level.

In the area of the mine workings the rocks in the footwall of the vein zone structure are largely quartzite and those in the hanging wall are schists.

MINERALIZATION:

The vein zones are predominantly chloritic shear zones with extensive quartz mineralization. Locally the zones are mineralized to widths of 10 feet by lenses of mixed pyrite, jamesonite, sphalerite, galena and freibergite in a gangue of chlorite and siderite. The freibergite carries ore quantities of silver but the jamesonite and galena are not significantly silver-bearing. The Rex ores differ greatly from the Keno Hill type insofar as they contain very little galena and a large amount of jamesonite.

ORE OCCURRENCES:

Underground development exposed a low grade ore shoot on the footwall vein of the E-Zone and three higher grade shoots on the hanging wall vein. The 112 Raise, on the footwall ore shoot, was driven straight up the dip 115 feet and exposed 37 feet of ore from the level, indicating that the ore shoot rakes up to the east at about 25°. The 74 Raise, on the longest (145 ft.) hangingwall ore shoot, was driven straight up dip to within 70 feet of the surface in the middle of the B-Zone ore shoot. The top 46 feet of the raise exposed the B-Zone ore and indicated that the zone rakes down to the west from the surface and therefore has not been explored at depth west of the raise. The bottom 54 feet of the 74 Raise exposed comparable ore as that in the hanging wall ore shoot and indicates that the ore rakes up to the east at a low angle. Four diamond drill holes below the 74 Raise intersected good ore to depths of 120 feet below the level. These intersections are in the hangingwall ore shoots and are of higher grade than those exposed on the level.

In summary: The B-Zone ore shoot apparently rakes down to the west at a low angle and has been explored underground by only 46 feet of the 74 Raise. It should be further explored by subdrifting from the raise, by drifting west on the level, and by dry-drilling from the surface. At least three lower grade ore shoots occur within the E-Zone lense in the mine drifts and have been partially exposed in the 74 and 112 raises. They apparently rake up to the east to the scattered ore sections exposed on the surface in the E-Zone. They should be further explored by subdrifting from the raises and by dry-drilling from the surface. Further diamond drilling above and below the level in ore areas is also warranted.

A summary of the ore grades in the different shoots is as follows:

		Length (ft.)	Width (ft.)	Ag. oz./t.	Pb. %
B-Zone	—Surface	270	7	32.2	3.6
	—74 Raise	(46 ft. of vert. rse.)	4	17.2	4.5
Hanging Wall West	—Drift	75	3.75	19.1	4.8
	—74 Raise Drift	145	4	12	4.8
	—Drill Holes —below level	100	4	25	not assayed
Hanging Wall East	—Drift	40	5.4	113.	5.6
Footwall (112 rse)	—Drift	130	4	9.2	1.6
	—Raise	(37)	4	14.4	5

The lowest grade of the above ores has a gross value of $17.70 and the highest grade has a gross value of $56. (All values in Canadian dollars at present metal prices, Ag = $1.40/oz., Pb = $0.15/lb). The values are low but the tonnage potential may be good and, of course, the main high grade ore shoot (B-Zone) has not yet been explored. An increase in the price of silver will appreciably enhance the worth of this property.

No. 1 VEIN

This vein zone is essentially the same as the Rex in character, mineralization and habit. It was exposed by surface stripping east of Secret Creek for a length of 600 feet within which three A, B and C medium-grade silver ore sections were revealed. Drifting 250 feet below the surface confirmed the A and B shoots but missed the C shoot due to complex geology.

East and north of the easternmost exposure of No. 1 Vein there is deep overburden for a distance of 600 feet but at that point a strong wide zone has been stripped for a length of about 120 feet. This has been termed No. 2 Vein but probably represents the eastern extension of No. 1 Vein.

Ore Occurrences: The ore exposed on No. 1 Vein, both on the surface and underground, is characteristically low grade but distributed across widths as great as 30 feet. This structure has promise principally for large tonnages of medium to low grade ore, essentially the same as Peso Rex.

In the adit the following ore sections have been well confirmed:

	Length (ft.)	Width (ft.)	Ag/oz./ton	Pb/(%)	Gross Value/ton
A Zone (West)	80	9	6.1	5.1	$23.85
A Zone (South)	40	12	8.8	2.1	$18.60
A Zone (East)	105	14.3	20.9	4.4	$42.45
B Zone	160	6.4	17.6	1.7	$29.75

On the surface at the easternmost section of the vein zone (No. 2 Vein?) thorough surface sampling has confirmed the following two are sections:

	Length (ft)	Width (ft.)	Ag. oz./t.	Pb. (%)	Gross Value/ton
A Zone	100	12	82	5 (approx.)	$54.20
B Zone	60	10	25.3	"	$50.40

As in Peso Rex, the ore shoots on the No. 1 Vein appear to rake down to the west but not at such a low angle as at Rex.

All of the No. 1 Vein ore shoots warrant extensive dry-drilling from the surface, (diamond drilling has proven unsatisfactory on this zone because of very low core recovery), and further underground exploration.

ORE RESERVES AND POTENTIAL

The history of exploration and development on the Peso property has been one of finding very good surface values but of not finding correspondingly high values underground. In most cases this has been due to not exposing the proper structures underground because of lack of knowledge of the complexities of the vein zone structures. Much of the potential indicated by surface exposures has thus not been properly explored. Also, in other instances even though lower values have been encountered underground they still could comprise fair to low grade ore if more tons were developed and/or the price of silver would rise. Thus the Peso property has a very real and good potential value but it requires further development properly directed to specific ore targets.

In calculating the reserves shown in Table 3 the writer has considered "proven" ore to be that within 30 feet of good surface or underground exposures; "probable" ore is that which is 30 feet beyond the proven or that which is indicated by drill hole intersections. These categories are reasonably assured. As an indication of the potential target for further exploration the category of "possible" ore is given. This ore represents the possible ore existing on known structures projected along the trend of the known orebodies between and/or beyond "probable" ore and within reasonable reach of existing workings.

The total reserves on all occurrences at Peso Silver Mines (Mayo) is:

Proven	91,745 tons @ 23.7 oz. Ag/ton, 3.7% Pb
Probable	61,885 tons @ 16.7 oz. Ag/ton, 3.7% Pb
TOTAL	153,630 tons @ 20.9 oz. Ag/ton, 3.7% Pb

The gross value of this ore, in Canadian funds at present metal prices is $40.40 per ton for a total in the ground of $6.2 million. Total costs of mining, milling, marketing etc., at Peso have been calculated to be $25 per ton of ore. Assuming a 90% recovery and $25 per ton costs, the net profit obtainable from Peso ore would be approximately $11 per ton at present prices.

TABLE 3

PESO REX ORE RESERVES—1965

Peso Silver Mines Ltd. (Mayo)

Structure	Category	Tons	Ag oz./t.	Pb%	Gross Value*
Rex B-Zone	Proven	39,500	32.2	3.6	$56.00
	Probable	4,900	32.2	3.6	$56.00
	Possible	130,000	—	—	
Rex Hanging Wall	Proven	4,800	12.	4.8	$31.20
	Proven	1,500	19.	4.8	$41.00
	Probable	1,500	19.	4.8	$41.00
	Probable	5,550	20.	4.8	$42.00
	Probable	12,600	12.	4.8	$31.20
	Possible	15,000	—	—	
Rex Footwall	Proven	11,500	11.	3.3	$25.30
	Probable	3,160	11.	3.3	$25.30
	Possible	12,000	—	—	
No. 1 Vein West (A1)	Proven	20,850	20.9	4.4	$42.45
	Probable	3,910	20.9	4.4	$42.45
(A2)	Probable	6,250	6.1	5.1	$23.85
(A3)	Probable	4,170	8.8	2.1	$18.60
(B)	Proven	8,900	17.6	1.7	$29.75
	Probable	15,150	17.6	1.7	$29.75
	Possible	60,000	—	—	
No. 1 Vein East (A)	Proven	3,130	28	5 (approx.)	$54.20
	Probable	3,130	28	5 "	$54.20
(B)	Proven	1,565	25.3	5 "	$50.40
	Probable	1,565	25.3	5 "	$50.40
Total tons:		370,630			
Total Proven tons		91,745 @	23.7	3.7	
Probable		61,885 @	16.7	3.7	
		153,630 @	20.9 oz. Ag	3.7% Pb	$40.40 (Can.)

*Gross value = Canadian dollars at $1.40/oz. Ag and $0.15/lb Pb.

METALLURGY

As can be deduced from the preceding descriptions of the type of ore at Peso Rex and No. 1 Vein, this ore is quite different from the United Keno Hill type of ore. The Keno Hill ore is characteristic in that the high silver-bearing freibergite is intimately associated with galena which forms the bulk of the ore and which is also silver bearing. The Rex type of ore has minor amounts of galena but considerbale amounts of jamesonite. The important economic differences in the ores are: 1) the Keno ores are generally much higher grade silver, and 2) the Rex ores are not burdened with a large amount of galena in their concentrate which, in times of low lead prices, will not pay for shipping from the Yukon, in other words the profit from the contained silver is depleted by the cost of shipping non-remunerative lead. At present metal prices, ($0.15/lb. lead), a profit is realized on the galena from United Keno Hill.

In 1964 the Britton Research Laboratories in Vancouver, Canada, did extensive metallurgical testing on a bulk sample of Rex ore obtained from the Hanging Wall Vein west orebody on the drift underground. This bulk sample assayed:

Silver	30.5 oz./t.
Lead	6.46%
Antimony	4.17%
Zinc	0.73%
Arsenic	2.23%

This sample is higher in silver than the average from the Rex but is otherwise typical. The reader is referred to the report by Britton Laboratories, (Investigation of a Sample of Silver-Lead-Antimony Ore, Peso Silver Mines Ltd., November 25, 1964), for details of all the experimental tests and various results for this work, the salient conclusions of the research are as follows:

1) **If a silver-lead-antimony concentrate** is made an effective recovery of 92%, 90% and 90% respectively can be made of the metals. The concentrate would assay about 150 oz. Ag/ton, 30% Pb and 19% Sb.

2) **If a silver concentrate** is made a total recovery of 88% of the silver can be attained in two concentrates; one assaying 1000 oz. Ag/ton and the other (13%) assaying 27 oz. Ag/ton.

3) If necessary a **silver-lead concentrate** can be obtained by removal of 99% of the antimony from the silver-lead-antimony circuit. The concentrate would assay about 188 oz. Ag/t. and 37% Pb.

All of the foregoing processes were accomplished by relatively ordinary milling procedures and common reagents. Reagent consumptions are generally low and milling costs can be assumed to lie between $3 and $5 per ton, probably closer to the lower figure. A recovery of 90% of the silver and lead seems assured.

It may be possible to market the jamesonite as a lead-antimony concentrate but at the present time this requires some effort to find a buyer for such a product.

CONCLUSIONS AND RECOMMENDATIONS

The principal objective at Peso (Mayo) should be to outline enough ore reserves to either justify a mill or shipment to United Keno Hill should they be agreeable to an adjustment in their mill circuit. In view of the relatively large tonnage of possible ore on the property, plus the unexplored lengths and depths of the two known ore-bearing structures, and considering that other Peso properties in the Mayo area have either proven ore or reasonably good potential for ore, it is recommended that primary consideration should be given to the objective of doing further development in order to prove more ore reserves. At Peso Rex an approximate budget to prove 500,000 tons and indicate an additional 500,000 tons is as follows:

Drifting and subdrifting at Rex and No. 1 Vein	4,100 ft. @ $ 50/ft.	$ 20,500
Raising at Rex and No. 1 Vein	1,800 ft. @ $100/ft.	180,000
Diamond Drilling (Rex)	5,000 ft. @ $ 10/ft.	50,000
Diamond Drilling (No. 1)	4,000 ft. @ $ 10/ft.	40,000
Surface dry-drilling (Total)	10,000 ft. @ $ 3/ft.	30,000
Mobilization (Camp, roads, etc.)		9,500
	Total	$415,500

Should the above program be successful in attaining the stated objectives then additional expenditures to prepare the mine for production and for mill construction would be approximately:

Mine preparation and development	$1,000,000
Surface plant and roads	500,000
Mill (300 t./day)	1,000,000
Total	$2,500,000

At 300 tons per day and assuming a net profit of $10 per ton the operation would return approximately $1 million net per year for the first three tax-free years.

The above figures do not include the possibiilty of obtaining additional reserves of possible higher grade from other Peso properties in the Mayo district.

RIO PLATA MINES LTD.

Peso Silver Mines Ltd., owns 37 percent of the outstanding shares of Rio Plata Mines Ltd.,

Rio Plata Silver Mines Ltd., hold 115 claims and fractions in the Mayo district 61 of which are included in the Plata Group of the Peso Rex block. The remaining 54 claims are distributed in ten relatively small groups on Galena and Keno hills and are all surrounded by United Keno Hill claims. One mile south of Elsa is the Chiko Group of eight claims; one mile north of Calumet is the Formo Group of 18 claims and fractions; immediately around Keno are the Aztec, Hacienda and Caribbean Groups totalling 13 claims; two miles east of Keno is the Capricorn Group of three claims, and six miles northeast of Keno are the Silver Basin group of twelve claims.

Of the above claim groups the Chiko is located well out in the Upper Schist Formation and is of little interest. The groups around Keno are located within the Central Quartzite belt on known vein structures and therefore warrant exploration. The Silver Basin groups are located along the footwall of the Central Quartzite on the projections of known ore structures and they warrant exploration. The Formo Group is located within the Lower Schist Formation where it includes sizable sills of greenstone. At least two vein structures are exposed by underground workings on this property and they are ore-bearing where they are within the greenstone. This property definitely warrants further work. A summary of the economic geology of the Formo Property follows:

FORMO PROPERTY: (Rio Plata)

The Formo property is located on a good road within a few miles of the United Keno Hill mill at Elsa on Galena Hill. The workings are on a northeast extension of the Calumet-Hector vein zones which are presently being mined on United Keno Hill property one mile to the southwest. This vein zone on the Formo claims lies within the Lower Schist Formation where it is extensively occupied by thick greenstone sills. One main zone is exposed on the surface for a length of 150 feet at elevation 2850 feet. It is further exposed on two adit levels, one at elevation 2700 and the other at 2600 feet. The vein zone strikes northeast to north in a branching curve and dips at about 45° to the southeast. The productive portions of the veins range in width from two to five feet, the average mining width would be about three feet. Near the north end of the surface exposures the vein zone is offset to the right by the typical northwest-trending Keno faults. Underground the vein zone bends and branches considerably but the main vein has been exposed by 400 feet of drifting on the 2700 Level and about 600 feet of drifting on the 2600 Level. The levels are connected by two raises which were driven straight up the dip from an ore section in the lower level.

ORE OCCURRENCES: The ore at the Formo is of the Keno Hill type, namely, silver-lead-zinc with the silver occurring in freibergite which is intimately associated with the galena. It is evident from the underground work that at least three ore shoots are localized on the main vein zone and a branch vein within two bands of greenstone. The ore does not extend into the adjacent schists even though the vein zones themselves are strong structures in the schists. The trace of the intersection of the greenstone sills on the vein zones is about 45° down to the southwest consequently the rake of the ore shoots is also sharply down to the southwest. For this reason the two raises, both collared in ore, were out of ore within short distances and the operators at that time (1952) became unreasonably discouraged with the propects of the property. They did not realize the control imposed on the orebodies by the greenstone sills. With present knowledge of the ore controls it is possible to confirm a fair tonnage of ore with a moderate amount of raising and short drilling, also, the potential of finding new orebodies along strike is excellent wherever greenstone or quartzite bands may be encountered.

RESERVES: The mine is at too preliminary a stage of development to consider the ore reserves as well established but the ore that has been outlined is worthy of record. The potential of the deposit appears to be very good to supply a modest amount of medium grade ore to a common Peso mill in the Mayo area.

Ore sections exposed on the levels and thoroughly sampled are as follows:

Level	Length	Av. width	Ag/(oz./t.)	Pb (%)	Zn (%)	Gross Value/ton
2600 (west)	95	3	29.3	10.2	13.1	$111
2600 (Sta. 22)	50	3	4.5	4.4	4.5	$33.30
2600 (Raises)	175	4	10.7	6.4	17.6	$87.00
2700	200	3.5	18.4	6.6	4.2	$58.00

The vein is exposed at the surface in five trenches in a length of 140 feet, samples taken from these trenches, from southwest to northeast, are as follows

	Width (ft.)	Ag (oz./t.)	PB (%)
1	2.6	80	30.7
1 + 30′	1.2	135.6	43.8
1 + 80′	1.2	155	71.4
1 + 110′	3	92.2	20.9
1 + 130′	3	88	35.1

Because these samples are widely spaced and not correlated with the underground shoots they are only significant in that they indicate that the ore extends to the surface.

It should be realized that at the time that the development work was done at the Formo the price of silver was $0.90 (Can.) per ounce, lead was $.09 per lb. and zinc was not paid for by the smelter; therefore it is readily understandable why the above grades found underground were a disappointment to the operators. At present prices of $0.15 per lb. for lead and zinc, both paid for, and $1.40 per ounce for silver the value of the Formo ore has changed very appreciably in thirteen years.

Using the underground sample results and taking 30 feet of elevation on either side of the levels as "proven" ore and the next 30 feet as "probable", and the extension to the surface as "possible", the reserves at Formo are as follows. (Using a rake of 30° for the orebodies.)

	Category	Tons	Ag.	Pb.	Zn
2700 Level	Proven	8400	18.4	6.6	4.2
2700 Level	Probable	8400	18.4	6.6	4.2
2600 Level	Proven	3400	29.3	10.2	13.1
2600 Level	Probable	3400	29.3	10.2	13.1
2600 Level	Proven	1800	4.5	4.4	4.5
2600 Level	Probable	1800	4.5	4.4	4.5
2600 Level	Proven	8400	10.7	6.4	17.6
2600 Level	Probable	8400	10.7	6.4	17.6
Surface	Possible	21600	—	—	—

Total proven and probable = **44,000 tons @ 16 oz. Ag, 6.9 Pb, 10.7 Zn**
Present gross value = **$77** per ton for a total of $3.4 million

The above tonnages will have to be further confirmed by raises but their existence appears to be reasonably assured judging from the geology and sampled exposures. The immediate potential of the deposit would appear to be easily 100,000 tons, with good indications for much more. A very modest development program would be required to properly assess the Formo deposit.

METALLURGY: The Formo silver-lead-zinc ores are very different from the Peso Rex silver-lead-antimony ores but it should not be too difficult an adjustment to construct a mill circuit to accommodate both, either simultaneously or separately. Should this be possible the Formo reserves would add considerably to those at Peso Rex.

An alternative course of operation would be to approach United Keno Hill to determine if they would take a reasonable tonnage of Formo ore for custom milling. Such an arrangement may particularly appeal to that company if they are planning on enlarging their mill.

RECOMMENDATIONS: The development necessary to prove and prepare the ore reserve expected at Formo includes principally raises and sublevels, with provision for more exploratory drifting. Diamond drilling can also be used to advantage to guide development underground and dry-drilling from the surface would be well suited to determine the location of ore shoots between the upper level and the surface. Presumably no mill would be required if the operation were carried out in conjunction with other Peso Silver Mines operations in the Mayo area. An estimate of the capital cost to accomplish the above development work and to prepare the mine for production is as follows:

Drifting and subdrifting	—1000 ft. @ $50	$ 50,000
Raising	—1000 ft. @ $100	100,000
Mine plant	—Rehabilitation	200,000
Diamond drilling	—2000 ft. @ $10	20,000
Dry-drilling	—2000 ft. @ $3	6,000
Production preparation	—Stope preparation etc.	24,000
	TOTAL	$400,000

It would take approximately six months to accomplish the above work.

DUNCAN LADUE PROPERTY

Peso Silver Mines Ltd holds 85 percent interest in 24 mineral claims in two groups known as the Duncan Ladue Group and the Nova Group, completely surrounded by the United Keno Hill claims. The property is four miles northeast of Keno City. The claims lie in the footwall of the favourable Keno Hill quartzite belt and are themselves underlain by greenstone and some schist.

History: Immediately west and south of the Duncan claims the Sadie-Ladue vein system was discovered on the United Keno Hill claims in 1921 and was developed and mined to supply the major part of the silver production at Keno in the 1920's. The Sadie-Ladue vein system strikes northeastward and dips 60° to the southeast. Along strike to the northeast it passes into the Duncan property in the middle of the west side of the Yukon M.C. One thousand feet southwest of the Yukon M.C. boundary the vein zone passes from favourable quartzites into unfavourable schists and at that point mining by the original Keno Hill operators ceased.

In 1962, Dr. A. Aho, realizing that much of the Duncan Property is underlain by competent, therefore favourable, greenstones and that the Sadie-Ladue vein system should strike through this host rock, recommended bulldozer trenches to be cut to explore for the vein. The vein was exposed for a length of 160 feet with average widths of 3-4 feet and grades ranging from 20 to 400 oz. Ag per ton. In 1962-63 a drift adit was collared on this exposure and drifted for a length of 97 feet. Although sections of high assays were obtained in this drift the vein was generally narrow, less than one foot in width, and the drift was stopped. No further work has been done on the property, however, in 1965 United Keno Hill have begun reactivating the Sadie-Ladue workings.

ORE POTENTIAL:

In the short adit driven in 1962 the hanging wall wallrock is schist and the footwall is greenstone. Further to the southwest along strike both walls will be greenstone and the vein would be in more favourable ground. The occurrence of considerable very high grade ore on the surface and, less so, in the adit, plus the excellent productivity of this vein system on United Keno Hill ground to the southwest, indicate that this property is worthy of further exploration.

The potential for this property is one of small tonnage very high grade Keno-type ore.

RESERVES: A few thousand tons of silver-lead ore have been more or less indicated on the Duncan-Ladue vein by the work to date but the potential of the vein system has not been fully explored. The potential of the zone could be in excess of 50,000 tons if ore shoots are found in the greenstone.

RECOMMENDATIONS: It has been proven that the Copco dry drill provides an excellent instrument for exploration of the Keno type veins in permafrost terrain. It is recommended that the Duncan-Ladue Vein be thoroughly drilled from the adit to the southwest boundary of the claims by holes intersecting 50 and 100 feet below the surface and spaced at 50 feet intervals. (30 setups, 2 holes each, 150′ and 100′).

Costs: 7,500 feet of drilling @ $3.00 per foot — $22,500.

REFERENCES: 1962-63 reports by L. G. White, consultant. Files of Peso Silver Mines Ltd.

PESO PROSPECTS, MAYO, Y.T.

Aside from the foregoing properties in the Mayo area Peso Silver Mines Ltd. wholly owns and has part interest in a large number of claim groups in the area, all of which have been located on potential ore structures but most of which have had only a minor amount of exploration done on them. All of these prospects deserve some further exploration work, ranging from geological mapping etc to underground development, for although many or all of them may prove barren any one of them could prove to have apprecibale ore reserves to contribute to the Peso Silver Mines operation in the district. All were staked on geologically favourable portions of the Keno Hill Quartzite Formation north and west of Galena Hill.

Of the various claim groups one set is owned by Central McQuesten Mines Ltd., one by Silver Titan Mines Ltd and a third by Peso Silver Mines Ltd. The properties are discussed below under the company headings.

SILVER TITAN MINES LTD.

Silver Titan Mines Ltd., own 251 mineral claims in seven groups distributed along either side of the South McQuesten River valley directly west of Galena Hill. At the time of writing this report Peso Silver Mines Ltd has an agreement with Silver Titan Mines Ltd whereby Peso are permitted to earn 60% of all revenue produced from Silver Titan properties. At the present time this agreement is under discussion and may be subject to change; nonetheless, to complete the picture of the Peso operations in the Mayo area the Silver Titan Mines properties are briefly described below. Three properties, Galena Hill, Shanghai and Mt. Haldane, are of considerable immediate interest by virtue of a large amount of development work invested in them by Peso Silver Mines Ltd. The remaining claim groups, Laysier, Argent, Ur and Bob, are of interest only as geologically favourable prospecting areas.

The Valley of the South McQuesten River is a broad, flat valley largely filled by glacial till and outwash deposits to depths up to 100 feet. This alluvial material is tightly cemented by permafrost and effectively raises the costs of conventional methods of mineral exploration. The Silver Titan properties are all located on bedrock along the edges of the alluvial valley floor. All of the Silver Titan properties except the Laysier, Argent, Ur and Bob, which have no workings on them, have been examined by the writer several times.

A. SHANGHAI:

This property is located where the Keno Hill Quartzite Formation emerges on the north side of the McQuesten valley as the north limb of the McQuesten Anticline. The formation in this location consists of successions of schists and quartzites up to 200 feet in stratigraphic thickness, interspersed with greenstone sills of similar thicknesses. The beds strike east-northeast and dip 20°-40° to the northwest. Near the eastern end of the property, 500-700 feet above the valley floor, the rock formations are offset by a number of branching mineralized fault zones that trend northeastward and dip steeply to the northwest. The topographic expression of the two main fault zones are drift-filled gulleys that angle up the hillside. Locally the rock on the sides of these gulleys exhibit small occurrences of galena and tetrahedrite which are very high in silver content. The objective of exploration on the Shanghai property has been to explore one or more of the northeast trending fault zones underground, preferably within quartzite or greenstone wallrock. The reasons for this objective are: (1) The occurrences of high grade silver mineralization on the surface near the fault zones, and (2) the fact that such structures in this rock formation are the major ore-bearing structures at Keno Hill and Galena Hill. In the western part of the claim group the quartzite beds thin down sharply and there are no indications of fault-vein zones or silver mineralization; therefore, the only area of economic interest lies near the east end of the property and is covered by Shanghai claims No. 1-8 inclusive.

Development: Early in 1964 an adit was collared, at elevation 2250 feet, below the west end of the main fault zone exposures and a crosscut was driven 250 feet to the vein zone. The vein zone was then exposed for a length of 450 feet to the northeast by drifting and crosscuts. The zone in this area is a strong shear mineralized with quartz and sphalerite up to widths of 30 feet. A section 175 feet in length assayed 13.6% Zn and 1 oz. Ag/ton across an average width of 8.2 feet. There was no indication of high grade silver mineralization.

To explore more of this vein zone more rapidly it was decided to drive a heading 20-50 feet off to one side of the zone and probe the zone by crosscuts and drill holes. This heading was then driven at length of 1200 feet to the northeast. Eleven drill holes were drilled through the vein zone from the drive before work ceased on the property early in 1965.

Results: Of the holes drilled three returned intersections of high grade silver mineralization. Two of these intersections are 100 feet northwest of the zinc body in the drift but they are on two different structures, one on the main vein zone (SU-15) and the other on a hanging wall branch (SU-5). The third intersection (DH SU-14), was obtained from the main vein zone 1100 feet to the northeast. Five other holes tested the vein in the 1100 feet interval between the high grade intersections and returned negative results. This distribution of drill holes is of course a very sparse testing of the entire zone but the three high grade intersections are encouraging for further exploration. These intesections indicate Keno Hill type ore; they are:

	Width (Ft.)	Ag/oz./ton	Pb %	Zn %
Southwest end SU-5	3	90.4	46	5.7 (hanging wall)
SU-15	4.5	99.2	22.7	2.0
Northeast end SU-14	0.1	637.5	24.2	29

The high grade Shanghai intersections can represent one of two situations; a) Portions of large, probably rich, orebodies have been intersected or b) Small high grade but discontinuous non-economic bodies have been intersected. The only way to determine which situation exists is to drive into the intersections with crosscuts and open them up. At SU-15 this would require about 15 feet of drift and 40 feet of boxhole raise, at SU-14 a 100 feet crosscut is required. All of this work could be done for less than $20,000.

Conclusions: The potential at Shanghai would appear to be, at best, one of a modest tonnage, since there is only one or two main ore structures of high grade to develop. If the ore is lensey and limited in tonnage it may still be profitable to mine it as feed for a common Peso Mayo mill. Because of the confinement of development to one structure at Shanghai it would require a long time to carry out the exploration necessary to block out enough ore reserves on the property to determine if it can support a mill by itself. Indications from the work on the 2550 Level are that if ore does occur on the Vein Zone it is in separated shoots, not in large pervasive bodies; this of course imposes a high development cost on the deposits to be mined.

In conclusion, it appears that the Shanghai deposits, if they exist, would be of high grade but possibly limited tonnage; therefore, they would best be developed as subsidiary feed to a Peso custom mill or shipping or to United Keno Hill.

B. MT. HALDANE:

This property is held by the Ted Group of claims which is centered on a valley cirque on the northwest side of Mt. Haldane a prominent peak six miles southwest of Shanghai. In the early 1900's three shallow adits, the Middlecoff Workings, were driven into the west valley side to expose by drifts and raises a wide mineralized fault and breccia zone which strikes north and dips 45°-60° west. The essential features of these workings are:

Level Elev.	Drift length (ft.)	Width Zone (ft.)	Range of Ag Assays (oz.)
3765	20	25	5.95
3725	100	5-10	Generally less than 10
3600	300	1-5	Generally less than 10

Both the 3725 and 3600 Levels contain a few short very high grade (50-100 oz. Ag) ore lenses.

The principal work done on the property in 1964-65 has been the reopening, mapping and sampling of these adits, plus geochemical surveying and some drilling of the entire cirque area. At least two other strong, wide silver-bearing vein-fault zones have been disclosed on the opposite (east) wall of the cirque from the three adits but extensive and deep talus slopes seriously inhibit exploration of them by surface stripping or diamond drilling.

Results: Excellent mapping and sampling of the Middlecoff adits by Dr. A. Aho and Mr. R. Dion have confirmed the persistence and good width of the vein zone for an exposed lenght of 300 feet and depth down dip of 300 feet. Low grade silver mineralization is persistent throughout the structure and medium grade shoots are common, despite the fact that on none of the levels is the full width of the zone exposed.

The best ore sections encountered in the sampling are:

	Length	Av. Width (ft.)	Ag (Oz.)	Pb (%)	Zn (%)	Gross value ton*
1) Winze below 3600 Level	45	3.2	22.6	18	1.2	$88.00
2) Northend 3600	25	2	27.4	2	.75	46.50
3) 3765 Level	20	16	7.8	2.7	1.1	23.00

*Gross value @ $1.40/oz. Ag and $0.15/lb. Pb-Zn (Can.)

These ore sections are not definitive because, with the exception of the winze, most places are not well enough exposed to permit proper sampling; however, they do indicate that ore exists on the structure and of sufficient grade and quantity to warrant further development.

Recommendations: The results of exploration at Mt. Haldane to date indicate that the property is a most favourable prospect to develop. It seems almost assured that at least modest tonnage, good grade orebodies will be disclosed at the Middlecoff workings by further underground development. In addition, the potential of the entire property is considered to be good because of the existence of three or more strong, mineralized vein-fault zones traversing favourable country rocks (quartzites and greenstones). To confirm the possible orebodies the best practical procedure would be to: 1) rehabilitate the old workings, 2) slash the drifts to full widths and resample them, 3) drive raises between the levels and subdrift ore sections, 4) crosscut into the hanging wall on the bottom level and diamond drill to depth. The results of such a program would indicate the grade, size and frequency of orebodies on this part of this vein zone and permit better assessment of the property as a whole. The cost of such a program would be approximately $100,000.

It appears very likely that the Mt. Haldane property would be able to contribute some high grade ore and/or considerable medium grade or (Keno Hill type) to a Peso Mayo custom mill.

C. GALENA HILL:

Silver Titan holds a large block of claims (127) on the west edge of United Keno Hill property which covers about four square miles of the South McQuesten valley floor just along the south side of the valley. Outcrops are few on the property and drilling has indicated that the gravel and glacial till deposits fill the valley to depths up to 70 feet. Resistivity and electro magnetic surveys of this claim group have indicated that the bedrock underlying the alluvial deposits contains fracture structures similar in distribution, size and pattern to the productive vein-fault zones on Galena Hill. Also, this entire claim group is underlain by the favourable Central Quartzite Formation. The great depth of overburden in permafrost has forestalled to date exploration of this geologically very potential ground.

A few drill holes and several scattered prospect shafts sunk by steam-point during the winter have confirmed that the structures detected by the geophysical surveys are indeed fault structures, but no mineralization was found on them where they were intersected.

The potential of the Galena Hill property of Silver Titan is obvious, but the selection of a sure, reasonably inexpensive method of exploring it is extremely difficult because any method is essentially a shot in the dark which may or may not hit mineralization on a vein zone and that mineralization may or may not be economic. The occurrence of ore on the Silver King (UHK) immediately east of this property, at Mt. Haldane to the west and on Shanghai to the north strongly suggests that ore exists somewhere on the Silver Titan Galena Hill claims, finding it is a very large problem. If some practical method can be devised to narrow down the targets on this property then the potential of the property may be properly assessed. The best possible solution at this time would be to grid the geophysical anomalies with dry-drill (overburden) holes at very close spacing. A comprehensive program of this nature would cost approximately $100,000.

Recommendations: Because of the difficulty of exploring and subsequently developing this property it would be many years before production could be realized from it even if the exploration results were successful. From the point of view of Peso Silver Mines Ltd, there are many other properties in the Mayo area which they can spend money on and which will return production results much sooner; therefore, it is recommended that work on the Silver Titan Galena Hill claims be deferred until all the other properties have been properly tested.

D: UR, BOB, LAYSIER AND ARGENT:

All of these claim groups are located where topographic lineaments suggest the existence of northeast-trending vein zones crossing the Central Quartzite Formations. Most of the properties have been mapped geologically in a reconnaissance manner and some ore float has been found in a few places. Geochemical anomalies along a strong lineament on the Ur Group suggest a good target for overburden drilling on that property. The remainder of the properties require careful examination by an experienced geologist to determine if any worthwhile targets for overburden drilling occur on them. Such an assessment would of course be a summer project.

CENTRAL McQUESTEN MINES LTD.

Six miles west of Mt. Haldane, on the south side of the South McQuesten valley, Central McQuesten Mines Ltd, hold a block of 91 claims located on an up-faulted section of the Central Quartzite Formation. Some good float and high geochemical (soil) samples have been found on the property but as yet no comprehensive work has been done on it. The property has good potential for future prospecting.

Peso Silver Mines Ltd owns 85% of the outstanding shares of Central McQuesten Mines Ltd.

OTHER PESO CLAIMS

In addition to the claim groups and properties described in the preceding sections of this report Peso Silver Mines Ltd wholly owns a number of other groups of claims in the Mayo District. These are:

SHUR GROUP: 60 claims located along the Central Quartzite Formation between the Shanghai and the Ur Group. No work has been done on these claims but they are required as insurance in view of the encouraging results obtained underground on the Shanghai property. The Shanghai ore structures extend northeastward onto these claims.

CONTACT, SECOND AND GUESS GROUPS: In 1964 the Geological Survey of Canada conducted a program of soil and stream silt geochemical sampling of the entire Keno Hill Quartzite belt west of Keno Hill. The results of this survey were published as anomaly maps early in 1965 and a number of the more promising anomalies were staked by Peso Silver Mines Ltd at that time. These claims are in three groups totalling 66 claims located as follows:

CONTACT GROUP—25 claims—3 miles north of north end of McQuesten Lake
SECOND GROUP] 41 claims —4 miles east of middle of McQuesten Lake
GUESS GROUP] —Adjoins east end of Second Group

These claims have no immediate value but do have favourable potential for future prospecting. Practically all of the other anomalies disclosed by the geochemical survey were staked by United Keno Hill.

CONCLUSIONS

The diverse holdings of Peso Silver Mines Ltd cover a wide spectrum of opportunities from prospecting favourable claims to bring partially developed properties into production. All of the ores are primarily silver with subsidiary lead and zinc, some are the heavy silver-lead ores of the Keno Hill type.

The properties of principal immediate interest are the Peso Rex and the Rio Plata (37% Peso) because there is enough ore proven and indicated on these two properties to warrant further development toward production and the installation of a common mill or possibly the shipping of ore to Keno Hill. The former alternative would almost assuredly be the more profitable. The two main vein zones at Peso Rex presently contain a reasonably well proven-probable reserve of about 154,000 tons @ 20.9 oz. Ag/t. and 3.7% Pb for a gross value of $40.40. Most of the property requires and warrants exploration for further reserves. Two vein zones at the Formo property of Rio Plata contain a probable and indicated reserve of 44,000 tons @ 16 oz. Ag/t., 6.9% Pb and 10.7% Zn for a gross value of $77 per ton. Although much confirmatory development work needs to be done on these properties it appears evident that between the two of them enough reserves of ore are indicated to operate a 100 ton/day mill for six years. Since the potential of the properties is good and much is relatively unexplored it is reasonable to expect that the reserves could readily be expanded to support a 300 ton/day mill for a more extended period.

Metallurgical tests and cost studies indicate that a net profit of $15-$20 per ton could be realized from the combined Peso Rex and Rio Plata ore thus returning profit of about $1.5 million annually from a 300 t./day operation. Capital costs for development of the properties and installation of the mill etc., would be approximately $3 million of which about $800,000 would be expended initially on development work to confirm the probable reserves and indicate whether the full project would be warranted.

The installation of a mill in the Mayo Area by Peso Silver Mines Ltd is further encouraged by the ore potential of a number of other properties in the district which are either totally or partially owned by Peso. In order of immediate importance these properties are: Duncan Ladue, Shanghai and Mt. Haldane. The many other claim groups held by Peso Silver Mines Ltd are promising ground for exploration and some may prove to harbour ore-bearing structures. The Duncan Ladue, Shanghai and Mt. Haldane properties are in the very preliminary stages of exploration and although each have encouraging indications of ore on them each will require considerable expenditures to properly evaluate and develop.

The writer recommends that if possible the development of the Peso Rex and the Rio Plata be resumed at least through the preliminary phase proposed to firm up the ore reserves presently indicated. If a milling operation can be established in the Mayo Area on these properties by Peso Silver Mines Ltd the potential of the area is such that the mill will in all probability be assured of feed for 10-20 years or more.

Respectfully submitted,

Douglas D. Campbell, P. Eng., Ph.D.

DOUGLAS D. CAMPBELL
CONSULTING GEOLOGIST
314 MARINE BUILDING
VANCOUVER 1, B.C.

November 10, 1965.

CERTIFICATE

I, Douglas D. Campbell, with business and residential addresses in Vancouver, British Columbia, do hereby certify that:

1. I am a consulting geological engineer.
2. I am a graduate of the University of British Columbia, (B A.Sc., Geological Engineering, 1946), and of the California Institute of Technology, (PhD., Economic Geology and Geophysics, 1955).
3. I am a registered Professional Engineer of the Province of British Columbia.
4. From 1946 until 1957 I was engaged in mining and mining exploration in Canada and the United States as geologist for a number of companies. I was chief geologist for Eldorado Mining and Refining Co. Ltd., when I retired in 1957 to begin private practice as a consulting geologist.
5. I personally have examined all Peso Silver Mine's properties and have assessed all available data, government reports and private letters, plans and reports concerning the properties.
6. I have not received, nor do I expect to receive, any interest directly or indirectly in the properties or securities of Peso Silver Mines Ltd, or any associated companies.

Respectfully submitted,

Douglas D. Campbell, B.A.Sc., PhD., P. Eng.

Vancouver, Canada.