Report On
Porker 1-54 Claims

Located on NTS Map Sheet 95D/12
Lat:60°31'N Long.127°57'W
Watson Lake Mining Division, Yukon

for

HYLAND JOINT VENTURE

November 15,1973

A.R. Archer
Consulting Geological Engineer

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

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Report On

Porker 1-54 Claims 05

Located on NTS Map Sheet 95D/12

Latitude: 60°31'N Longitude: ~~122°57'W~~ 122°37'W

Watson Lake Mining Division, Yukon

for

7471.12

HYLAND JOINT VENTURE

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $ 7471.12

Resident Geologist or
~~Resident Mining Engineer~~

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

November 15, 1973

Commissioner of Yukon Territory

A.R. Archer

Consulting Geological Engineer

060920

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INTRODUCTION

The Hyland Joint Venture exploration syndicate, managed by Archer, Cathro and Associates Ltd. conducted helicopter supported regional exploration during 1973 from a camp situated on the north shore of Hulse (Quartz) Lake, in the Watson Lake Mining District, Yukon. The main group of Porker claims was staked in July with a few additional Porker claims added in August. These were explored by geological mapping and geochemical sampling at irregular intervals during the period 18 July to 31 August, 1973 by geologists B. Price, J. Slater, A. McLeod, M. Richards assisted by field men D. Eaton, W. Styan, I. Gibson and D. Cavers. A small program of linecutting was done in early August under contract to Eastern Associates Ltd. of Whitehorse. The Porker claims adjoin the eastern side of the McMillan property owned by Liard River Mining Co. Ltd. (an Asarco subsidiary) and, for this reason, a portion of the mapping and geochemical sampling extends onto the McMillan property to provide orientation. The McMillan property is described in some detail in this report for comparison purposes.

PROPERTY, LOCATION AND ACCESS

The Porker property consists of 54 contiguous Porker mineral claims registered at the Watson Lake Mining Recording Office as follows:

Claim	No.	Record Number	Expiry Date
Porker 1-12	12	Y73646-Y73657	18 July, 1974
Porker 13-48	36	Y73658-Y73693	19 July, 1974
Porker 49, 51, 53, 55, 56	5	Y73961-Y73965	8 August, 1974
Porker 50F, 52F, 54F	3	Y73966-Y73968	8 August, 1974

The claims are situated on the south side of Hulse(Quartz) Lake on map sheet NTS 95D/12 at approximately Latitude 60°31'N and Longitude 127°57'W as shown

on Figure 3 on the following page. There is no road access to the area. Hulse Lake is forty-two air miles northeast of Watson Lake, Yukon.

HISTORY

The McMillan showing was discovered in 1892 by prospectors engaged in the last stages of the Gold Rush, and rediscovered by Ken McMillan in 1948. McMillan optioned the claims to Noranda, which in turn optioned them to New Jersey Zinc in 1949-1950. In 1951, these partners entered into a joint venture with Asarco and later formed the present operating company, Liard River Mining Co. Ltd., in which Asarco now holds the major interest. The operating company has drilled a totel of 23,155 feet in 93 holes. The most recent work has been an I.P. survey(1967), 3400 feet of drilling (1968) and limited geochemical surveys in 1970-1972.

In 1967, the area surrounding the Liard River Mines claims on the north, west and south was staked by Redfort Prospecting Syndicate. These claims were later transferred to Fort Reliance Minerals Ltd., which carried out airborne and ground geophysics in 1966, drilled 1913 feet in 6 holes in 1968, and has since allowed most of the claims to lapse.

The Porker claim group was staked on the east side of the Liard River Mining Co. property in July, 1973. The central part of the Porker group has been staked once before, as the SN claims by Liard River Mining Co. Ltd. in August, 1954. During that year, Liard River carried out linecutting, geological mapping a total-heavy-metal geochemical survey and a vertical-

FIG. 3

ARCHER, CATHRO & ASSOCIATES LTD

INDEX MAP-MAJOR GEOLOGICAL FEATURES

HYLAND JOINT VENTURE

Scale 1" = 16 miles (approx.)
1 : 1,000,000

loop EM survey in the central portion. In 1954 or 1955, Liard River carried out limited hand trenching near the present property boundary and drilled two vertical diamond drill holes (LR 64 and LR 65) , which lie just inside the Porker claims. The Liard River claims expired about 1960 and there is no evidence of later work.

1973 PROGRAM

Initial work consisted of geochemical orientation and stratigraphic mapping in the immediate vicinity of the deposit, together with reconnaissance prospecting and geochemical traverses elsewhere on the Asarco property. In the course of this work, investigation of strong photo linears parallel to Mine and Pyrite Creeks led to the discovery of limonite-siderite gossans to the east (Zone A on the Porker claims). Initial soil sampling and prospecting around the gossans showed the presence of intense arsenic anomalies, strong hydrothermal alteration, and galena and sulfosalt occurrences and led to the Porker claim staking in late June and early July. Work carried out on the Porker claims later in the season consisted of detailed prospecting over most of the claims, brushing out the old Liard River baseline and grid, a small linecutting program to extendthis grid to the edges of the property, and the beginning of a grid soil sampling program. Meanwhile, additional reconnaissance traverses were done on the Liard River property and immediately south in the Gretchen Peak area, a small grid sampling program and more detailed mapping was done near the McMillan deposit, and several of the

Liard River drill holes were logged.

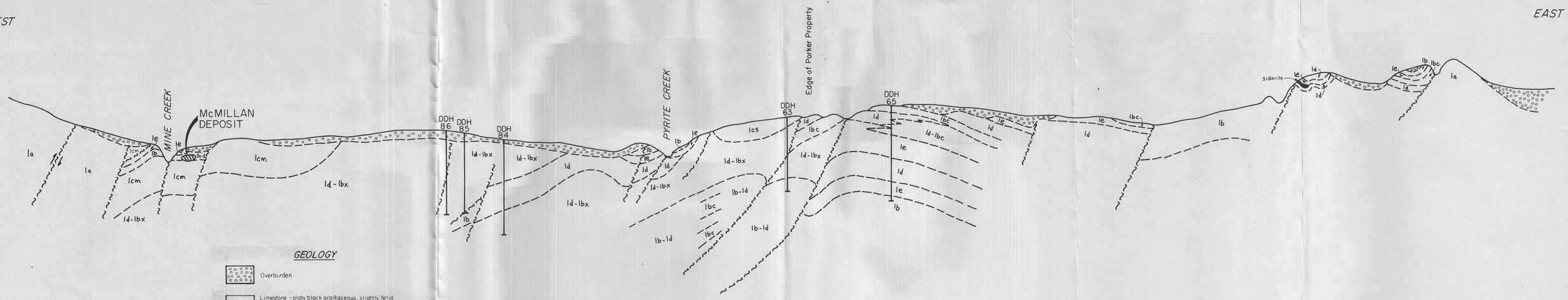
GEOLOGY

McMillan - Figure 17 illustrates the surface geology of the Liard River and Porker claims in plan, while Figure 18 on the following page is a cross-section through the properties. Exposure is poor along the main valley occurpied by Noranda, Hulse (Quartz) and Roy Lakes due to the presence of thick, extensive glacial drift on lower slopes. On the Porker claims, overburden is thin except in the southeast and northwest corners and sufficient outcrop and near outcrop float was found to allow the preparation of a reasonably accurate map. On the Liard River property, outcrop is very scarce and the best exposures occur where Mine and Pyrite Creeks have cut through the glacial drift and formed bedrock canyons. Through a fortuitous accident of erosion, the low-grade, peripheral mineralization and alteration related to the McMillan deposit are exposed in the banks of Mine Creek in a window of outcrop surrounded by extensive overburden.

Exposures on Mine Creek upstream from the deposit consist of grey, tan and maroon phyllites and silty phyllites of unit 1c. Bedding and schistosity are slightly divergent, with schistosity averaging 150°/50°NE and bedding 100°/40° NE. The frequency of quartz-siderite schistosity-plane veining and the amount of mineralization increases towards the deposit (stratigraphically upward). Malachite, pyrite, sphalerite and manganese oxides occur in narrow stringers in a cliff of phyllites approximately 1000 feet upstream (south) from the Main showing. Limy bands commence about 500 feet south of the showing. At a point fifty feet stratigraphically below the mineralized zone, alternating beds of phyllite and white quartzite contain six inch bands

WEST

EAST



GEOLOGY

	Overburden
le	Limestone - platy black argillaceous, slightly fetid thinly bedded & interbedded with phyllites. Grades into brown silty limestone; contains minor sedimentry breccia
lc-d	Phyllite - green to grey or black, sheared, sericitic and graphitic in McMillan area. Thin quartzite interbeds.
lcm	Silty Phyllite - pink, maroon, tan or green thin limy or quartzite beds. Sericitic, thin bedded, strong cleavage.
lm	Schists and meta-quartzites — green crenulated sericite schists and interbedded quartzites probably equivalent to lc, ld but moderately deformed & metamorphosed.
lbx	Sheared pyritic breccia with quartzite fragments in phyllite matrix
lb	Quartzite - medium to coarse grained, silicified or strongly veined by quartz, pyritic. Brecciated and sheared in places. Occasionly interbedded with phyllite.
lbc	Calcareous quartzite — buff to blue grey, lithic sandstone or greywacke, massive to platy, sericitic, grades to sandy or silty limestone
lcs	Strongly silicified rocks of unknown origin. Rock almost completely replaced by finely crystalline quartz
la	Grits - coarse augen grits & augen quartzites, kaolinized feldspar clasts, pyritic and generally veined by quartz
lbs	Siderite zones - generally replacing quartzite horizons. Gossans resulting from weathering of siderite zones. Symbol also used for Fe-Oxide rich breccia zones.

LEGEND

~~~~ Fault

——— Contact

Association of Professional Engineers of the Yukon Territory
A. R. ARCHER
GEOLOGICAL
15 Nov/73
ENGINEER

FIG. 18

ARCHER, CATHRO & ASSOCIATES LTD.

SIMPLIFIED CROSS-SECTION

McMILLAN DEPOSIT

HYLAND JOINT VENTURE

SCALE IN FEET (APPROXIMATE)

HORIZONTAL
0 1000 2000

VERTICAL
0 200 400

To accompany report dated Nov, 1973
~~~~

or lenses of massive pyrite which pinch out along strike into unmineralized quartzites. Cross-cutting veinlets of sphalerite-galena-pyrite are also present.

At the main showing, mineralization is exposed in several hand trenches on the east bank of Mine Creek. A massive sulphide band approximately three feet thick is underlain by pyritized, bleached phyllite and quartzite, although the base of the mineralization is not exposed. The mineralized horizon consists of manganiferous sideritic carbonates replacing quartzite and mineralized with sphalerite, galena, pyrite, arsenopyrite, and chalcopyrite, in decreasing order of abundance. Grain size varies from fine (with sheared appearance) to medium. Sphalerite is usually chocolate brown but ruby red sphalerite was seen in one core sample. Fine prisms of arsenopyrite were noted in several rock and core samples, and massive pyrite from below the ore horizon contains over one per cent arsenic. The siderite is tan-coloured and gives rise to dark brown and black oxidized coating on surface specimens.

The upper contact of mineralization is exposed and is rather sharp . A thin phyllite band separates mineralization from overlying white, silty to sandy fine-grained limestone ,and several similar phyllitic bands are present in the lower portion of the limestone. The light colored limestone is three feet thick at this locality, but becomes thicker elsewhere. Fine silty laminae along cross bedding are visible on weathered surfaces. Immediately above is a band described by the G.S.C. as limestone conglomerate but which appears to be actually a sedimentary breccia. Fragments range in size from a fraction of an inch to over six inches in greatest dimension,

and are composed of hard, grey-black,finely-crystalline limestone. The matrix is slightly more silty and weathers rusty to tan-colored. Several discontinuous phyllite laminae are present within the breccia, and laterally the limestone is massive in nature. These features suggest that the breccia is simply a facies of the limestone unit seen further downstream in outcrops and drill core. It is probably coincidental that the breccia is present over the mineral deposit and it is quite likely that the two phenomena are not genetically related.

Scattered sulphide mineralization is found over an extensive area surrounding the McMillan deposit. In numerous drill holes north and south of the showing, minor amounts of galena, sphalerite, chalcopyrite, pyrite, arsenopyrite and jamesonite are present. In the black, carbonaceous phyllites, massive pyrite bands, occasionally containing sulphosalts and arsenopyrite, are common. The arsenic mineralization appears to be present in an irregular halo around the mineral deposit. In hole 68, south of the showing, two separate pyritized sideritic bands are present below the limestone capping. This suggests that more than one mineralized horizon could be found.

Narrow pyrite and sphalerite lenses, which resemble beds, occur in phyllites and quartzites a short distance downstream from the main showing. At this locality,pyritization follows a suspected fault trace which cuts across bedding. Several other faults are known in the area from outcrop and core data, and several others are suspected from airphotos linears and topographic features, the prominent trend being about 020°.

Published reports indicate that the McMillan deposit is a tabular, stratabound body dipping gently to the east and containing about 1.5 million tons of massive sulfides grading about 9 per cent zinc, 6 per cent lead and

3 oz/ton silver. The following factors suggest a hydrothermal replacement origin for the McMillan deposit:

(1) Abundance of cross-cutting mineralized veins in adjacent sediments.

(2) Similarity of mineralization in cross-cutting and concordant features.

(3) The presence of major faults adjacent to the deposit, with apparent increase in pyritization near the faults.

(4) Irregular replacement of quartzites with manganiferous siderite, at more than one stratigraphic horizon.

(5) High lead-zinc content of the white, bleached limestones immediately above the ore horizon.

(6) Vague mineralogical zoning, with arsenic concentrations surrounding the mineral deposit.

Features which may suggest a syngenetic or sedimentary association in the early history of the deposit are:

(1) General lack of major veins in the sedimentary sequence.

(2) Presence of the deposit at a major facies change, similar to other suspected sedimentary deposits such as Redstone copper.

(3) Presence of a localized narrow sedimentary copper horizon within two miles of the deposit.

Porker - The Porker claim group is entirely underlain by Hadrynian sediments of units 1a to 1e. These have undergone only low grade regional metamorphism but strong shearing and hydrothermal alteration have locally obliterated the nature of the original sediment. Because of this, construction of a stratigraphic column for the area is extremely difficult. However, rock types are generally identical to those elsewhere in unit 1 and it appears that coarser clastics - augen grits and quartzites -

represent the lower part of the sequence and phyllites and limestones the upper part. Lateral increases or decreases in clastic content may be partly due to facies changes as well as hydrothermal alteration. The main rock types are:

Grit(1a) - the term grit has been used for those rocks which are too coarse to be classified as sandstones but are too fine for conglomerates. These rocks are seen on the eastern side of the Porker claim block,as well as on Gretchen and Bus Peaks to the southwest and in exposure on tributaries of upper Mine Creek. The grits are generally poorly sorted and contain large quartz 'augen' and clasts of white kaolinitic material , which probably represent feldspar granules. The quartz augen are only slightly elongate in shape. Generally the grits are rusty colored and slightly pyritic.

Quartzite (1b) - Two types of quartzite predominate on the Porker claims. The first approaches orthoquartzite in composition and is medium to coarse grained. It is found mainly in two large patches in the northern portion of the property and resembles the grit in containing abundant pyrite, weathering to a rusty color, and being non-calcareous and often flooded with interstitial silica cement and/or abundant quartz veins. This type of quartzite is host for a blue-green 'opaloid' mineral alteration (possibly an arsenic mineral) which is associated with arsenic and gold geochemical anomalies in the central part of the grid.

The second type of quartzite mapped is medium to fine grained, white to grey, calcareous quartzite, which is gradational to sandy limestone in several areas. In hole LR 65 and others, the two types of quartzite are interbedded with phyllites and form the basal members of graded sequences.

The relationship between the two types of quartzites is not clear although more detailed mapping might help. However it should be noted that both calcareous

and non-calcareous quartzites form the host rock for the McMillan deposit and that sideritic zones on the Porker claims are found within or near the more siliceous variety

Phyllite (1c) - Green, talcy to sericitic phyllite outcrops is common on the west side of the claims, but also occurs on the east side of a south trending gully southeast of Zone A. Bedding was not observed in the greenish phyllites but was seen in grey phyllites interbedded with quartzites in drill holes. Since the greenish phyllites are found in areas where major lineaments cross the property, the green coloration and talcy texture may be a result of hydrothermal alteration. Some float fragments seen in one of the major creeks resembles blue-green phyllites found adjacent to a narrow sedimentary copper occurrence at the head of Mine Creek. In drill holes LR 84 to 86, where green phyllites alternate with dark grey to black phyllites, the greenish coloration seems to be a result of bleaching of originally darker material.

The relationship between green phyllites on the Porker claims and varicoloured, silty phyllites on the Liard River claims is unknown, but in drill holes penetrating the McMillan mineralization, the phyllites beneath are predominately green.

Limestones (1e) - Limestones on the Porker claims appear to cap other rock types, and there may actually be an unconformity at the base of the limestone. Evidence of this is scanty but the limestone areas do cover the highest ground in the area and bedding is generally convoluted where seen, as if gravity sliding and slumping or decollement had taken place. The limestones are thinly bedded, argillaceous and fetid and resemble the thinner limy horizons seen in the drill holes in the north portion of the McMillan showing.

The limestones are associated with rusty areas and gossans. It is possible that the limy beds could act as a trap or baffle for mineralized fluids passing through quartzites beneath.

Careful prospecting on the Porker claims located several new mineral occurrences. These have been grouped with areas of hydrothermal alteration and gossans into four separate zones, one of which (Zone C) lies within the Liard River claims near the Porker boundary. A description of the four zones follows:

Zone A - is a north trending zone of siderite-limonite gossans and highly silicified quartzites. These gossans vary from a few feet in thickness up to 20 or 30 feet. Individual siderite lenses pinch out rapidly and can only be followed for a maximum length of 200 feet. The siderite is pyritic and manganiferous and forms black-brown limonite and manganese oxide boxwork texture. The main gossan area appears to follow the contact of the quartzite and the intertonguing phyllites and limestones. The lenses lie in a trend which follows the break of slope along a major lineament. A gossan at the junction of lines 18N and 151E appears to be a limonitic fault breccia rather than a siderite vein, and contains more yellow limonite than the mangano-siderite. The silicified quartzite attracted interest because of a greenish opaloid alteration, of which one grab sample assayed 0.029 oz/ton gold. This opaloid alteration is patchy but can be found over an area 4000 feet by 2000 feet that has a spatial relationship to the gossans and a linear trend that may be related to a thrust fault. A small area of jamesonite float was found on line 167E at 28N.

Zone B - centers around drill hole LR 65 at ION on line 110E and two old hand trenches at 24N on line 110E. The trenches expose a four inch shear zone in limy quartzite containing blebs and veinlets of galena and sulphosalts.

Two selected grab samples assayed 21.2 per cent lead, 0.01 per cent zinc, 0.13 per cent copper, 0.71 per cent antimony, 0.01 per cent arsenic, 0.005 oz/ton gold, and 23.8 oz/ton silver; and 0.35 per cent lead, 0.01 per cent zinc, 0.01 per cent copper, 0.02 per cent antimony; 0.006 per cent arsenic, trace gold, and 0.22 oz/ton silver. In the vicinity of hole LR 65, the quartzite is highly veined with quartz and siderite and contains scattered occurrences of galena and sulphosalts. The most interesting samples were located in float at ION on line 118E, 800 feet east of the drill hole, and consisted of galena and sulfosalts in a quartz stockwork cutting calcareous quartzite. An assay of a selected sample ran 2.05 per cent lead, 0.05 per cent zinc, 0.01 per cent copper, 0.01 per cent antimony, trace arsenic and gold and 2.68 oz/ton silver. The host rock appears to dip gently to the east and disappears under till. Abundant float of heavily pyritized and bleached quartzite is also found in the vicinity. The total area in which mineralization was found measures 2000 feet by 1000 feet. Hole LR 65 was apparently drilled on an EM anomaly and was unmineralized except for two thin galena stringers in interbedded quartzite and phyllites at a depth of 200 feet.

Zone C - is a flat lying sequence of highly silicified quartzites and phyllite that extends from the western edge of the Porker claims to Pyrite Creek. The rocks are a uniform grey color, highly pitted from leached pyrite, and have a high arsenic background. Holes LR 62 and 63 may have investigated EM anomalies in this zone. They intersected a 100 foot thick phyllite-quartzite breccia below the altered zone, possibly indicating a thrust fault. Zone C is very similar to Zone A except it has no siderite gossans along the west contact. Minor amounts of green arsenic staining is present but no other mineralization was seen in the zone.

Zone D - was discovered while prospecting lead soil anomalies and lies along line 34N. Two siderite gossans were also found, again associated with flat lying but contorted limestones, overlain by calcareous quartzite. Creek float and large boulders of quartz-veined quartzite contained small veins of galena and sulphosalts, similar in appearance to mineralization in Zone B trenches. No samples were assayed. This is the only locality where galena and sulphosalt veins have been found close to siderite gossans.

GEOCHEMISTRY (Figures 19 to 21 in pocket)

McMillan - Thick transported till cover over the McMillan deposit prevents any significant geochemical response in soils. Soil sampling included a grid over the southern 2/3 of the deposit (samples at 200 foot intervals on lines 400 feet apart), random samples in the valley immediately downstream to the north, and some reconnaissance sampling to the south. The only strongly anomalous response was in the creek bottom beside the deposit and downstream, where scattered vein mineralization and siderite gossans occur in small outcrops and talus areas. Here, arsenic and lead give the best contrast, with values ranging from 100 to 500 ppm arsenic over a background of 5 to 25 ppm , and 75 to greater than 4000 ppm lead over a background of 10 to 30 ppm. Only erratic, weakly anomalous values were obtained elsewhere on the Liard River property. The other three metals show no contrast or pattern in relation to known mineralization. Three weakly anomalous copper soil assays (49 to 65 ppm) were obtained along the west bank of Mine Creek, which contrast with a very low background of 5 to 25 ppm. Zinc assays range from 50 to 500 ppm, with a couple of very high spot values near the deposit. The assays over and near the deposit are erratic and generally near the lower end of the range. The most continuous area of zinc response is near

Mine Creek south of the deposit in an area underlain by silty phyllite. This area is also weakly anomalous in molybdenum (2 to 8 ppm) and assays low in lead, which suggests that the zinc is probably reflecting a higher rock background from the phyllites. A smaller areawith similar geochemical response but no outcrop occurs about two miles north of the McMillan deposit. In summary, it appears that the McMillan deposit would not have been detectable by geochemistry but for the downcutting action of Mine Creek, through the glacial till blanket and partially into the cap rock, which has exposed the peripheral alteration and disseminated mineralization.

Porker - The geochemical response of the Porker property is highlighted by a large arsenic anomaly which trends slightly east of north and generally follows the A Zone of mineralization. The anomalous area, as outlined by some grid sampling but mainly by reconnaissance samples, is about 6000 feet wide and at least 12,000 feet long, which is a surface area of about 2.5 square miles. It extends off the Porker claims to the northeast, where it passes under glacial till, and may still be open at the south end. The anomalous area exhibits a strong contrast over a background of 10 to 25 ppm arsenic,generally assaying better than 200 ppm and containing large areas of response exceeding 500 ppm. Rock assays show that much of the bedrock within the anomalous zone contains only 3 to 12 ppm arsenic. However, two main rock types have been identified which have an arsenic content from 50 to greater than 500 ppm and are unquestionably the source of at least part of the anomaly. One is a buff, calcareous quartzite (unit 1bc) which contains minute, disseminated grains of pyrite and/or another sulfide, possibly arsenopyrite. The second is an unidentified, hard, green, opaloid hydrothermal alteration which is closely associated with the sulfosalt showing and siderite/limonite gossans in Zone A. Smaller and less intense anomalies

occur west of the main anomaly which have only been partially outlined by sampling. One crosses the southeast side of Zone B while another extends across the claim boundary from the northwest end of Zone B to Zone C. Zone D produced only background arsenic response. The anomalous portion of Zone C is underlain by strongly silicified rocks (unit 1) but the other anomalies are probably caused either by hydrothermal alteration or scattered small sulfosalt occurrences.

Lead shows several areas of moderately anomalous response, which indicate that it is a good indicator for known vein-type galena and sulfosalt mineralization in Zones B and D. None of the anomalies have been completely outlined as yet by grid sampling. The anomalous lead values range from 50 to about 300 ppm, within a background of 10 to 30 ppm. Three anomalies are not associated with known mineralization: (1) a small area between Zones B and C (2) a larger area extending along line 18N between Zones A and B, and (3) a very large area south of Zone A. Only background response was obtained over Zone A. The southwest and northwest corners of the claim group need more reconnaissance sampling to define lead anomalies that trend into those areas.

Zinc, molybdenum and copper all give low response on the Porker claims. Only eleven erratic zinc assays above 150 ppm are associated with Zones A, B, and D and scattered highs elsewhere on the claims do not correlate with known metal-rich zones. A cluster of weakly anomalous zinc values (135 to 456 ppm) occurs on the north side of the claim block, in the glacial till-covered area near Hulse Lake. Weakly anomalous molybdenum assays (2 to 9 ppm) are associated with the zinc, suggesting that the source is a high rock background. No outcrop has been found in this area and it is

not known whether the source is bedrock or the till itself. Copper background is very low (5 to 25 ppm) and the only response of interest is a number of erratic high values (55 to 900 ppm) which trend northwest across Zone A. A few samples near the trenches in Zone B assayed 64 to 149 ppm.

Soil samples were collected from a B+C or C horizon. All geochemical analyses was done by Chemex Labs Ltd., North Vancouver, B.C. where samples were dried, screened to a minus 80 mesh fraction and digested in nitric-perchloric acid. They were then routinely analyzed for copper, molybdenum, lead and zinc using atomic absorption spectrometry, and for arsenic using a colorimetric determination. All samples assaying over 40 ppm arsenic were reanalyzed for gold by aqua regia extraction, preconcentration to an organic phase, and atomic absorption spectrometry.

CONCLUSIONS AND RECOMMENDATIONS

Further work is justified on the Porker property as it has the following geologic features in common with the nearby McMillan Deposit.

(1) Both properties are underlain by sedimentary rocks of Unit 1.

(2) Both areas have anomalous concentrations of arsenic in rocks. On the Porker claims, soils are residual and soil anomalies are intense. The McMillan area is covered by glacial or glaciofluvial overburden up to 100 feet thick which masks any possible soil anomalies. Silts, however, are anomalous in arsenic.

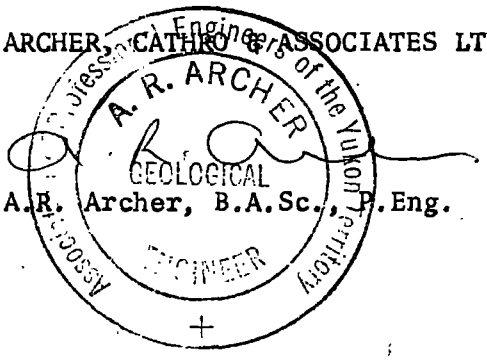
(3) In the McMillan area, mineralization peripheral to the deposit consists of massive and disseminated pyrite, disseminations and veinlets of arsenopyrite, veinlets of jamesonite, and a few veinlets of galena and sphalerite. Mineralization discovered thus far on the Porker claims is identical to this peripheral mineralization.

(4) In both areas, lenses of manganese-rich siderite replace quartzite horizons along fault zones. The sideritic lenses are associated with thin limestone horizons and form dark brown to black gossans. Iron oxide cemented breccias are common to both properties.

The McMillan Deposit appears to be a stratabound, hydrothermal replacement and is reported to contain 1.5 million tons grading 9 per cent zinc, 6 per cent lead and 3 oz/ton silver. A worthwhile target on the Porker claims requires similar grades but a much larger tonnage. Further work should consist of completion of the soil grid and mapping, followed by extensive geophysics within the arsenic anomaly to see if a drill target is present.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES LTD.



A.R. Archer, B.A.Sc., P.Eng.

In Pocket

Figure 17 - Geology, McMillan and Porker Properties,Scale 1"=1000 feet

Figure 19 - Arsenic and Gold Geochemistry, McMillan and Porker Properties, Scale 1"= 1000 feet

Figure 20 - Lead Geochemistry, McMillan and Porker Properties, Scale 1"= 1000 feet

Figure 21 - Zinc, Copper and Molybdenum Geochemistry, McMillan and Porker Properties, Scale 1"= 1000 feet

FORT RELIANCE MINERALS LTD.

UPPER LIMIT OF EXTENSIVE GLACIAL TILL

68-1

68-6

Fort Reliance Drill Holes

68-5

HULSE (QUARTZ) LAKE

ROY LAKE

MAJOR PORKER-HULSE FAULT

approximate location

MAJOR PORKER-HULSE FAULT

NA,NA,NA,0.26,0.18

LINEATION

FRONT OF GLACIAL TILL TERRACE

PORKER 1-56 CLAIMS
HYLAND JOINT VENTURE

HJV CAMP 1973

interbedded chlorite sericite schist and grit

trace chalcopyrite in quartz vein

NORANDA LAKE

LIARD RIVER CAMP

LR89 (collared in Id)

CREEK

OLD CUT GRID

ZONE 'A'

ZONE 'B'

ZONE 'C'

ZONE 'B'

LR86 sheared (collared in Id)

LR85 (collared Ibx)

shear breccia (collared in Iba)

LR84

BASELINE

LR62

LR63

LR65

LR64

As stain

bleached white quartzite

McMILLAN DEPOSIT

Gossan

mineralization in sideritic quartzite

FRONT OF GLACIAL TILL TERRACE

sheared Ibx phyllite quartzite

As stain silicified phyllite?

Quartz Centre (A152-299)

Quartz Centre (A152-298)

MAJOR PORKER-HULSE FAULT

MAJOR PORKER-HULSE FAULT

CLAIM LINE

CLAIM LINE

UPPER LIMIT OF EXTENSIVE GLACIAL TILL

PYRITE CREEK

CAMP

LR80 (collared in Icm)

LR82 (collared in Id)

LR68 (collared in Icm)

BASELINE 'A'

LIARD RIVER CAMP

FORT RELIANCE MINERALS LTD.

LIARD RIVER MINING CO. LTD.

68N

66N

36N

32N

28N

24N

20N

16N

00N

40S

26N

18N

19DE

14E

38S

60° 30'

127° 56'

127° 50'

GEOLOGY

Ic	Limestone – platy black argillaceous, slightly fetid thinly bedded & interbedded with phyllites. Grades into brown silty limestone; contains minor sedimentry breccia
Ic - d	Phyllite – green to grey or black, sheared, sericitic and graphitic in McMillan area. Thin quartzite interbeds.
Icm	Silty Phyllite – pink, maroon, tan or green thin laminated or quartzite beds. Sericitic, thin bedded, strong cleavage.
Im	Schists and meta-quartzites – green crenulated sericitic schists and interbedded quartzites probably equivalent to Ic, Id but moderately deformed & metamorphosed.
Ibx	Sheared pyritic breccia with quartzite fragments in phyllitic matrix
Iq	Quartzite – medium to coarse grained, silicified or strongly veined by quartz, pyritic, brecciated and sheared in places. Occasionally interbedded with phyllite.
Ibc	Calcareous quartzite – buff to blue grey, lithic sandstone or greywacke, massive to platy, sericitic, grades to sandy or silty limestone
Ics	Strongly silicified rocks of unknown origin. Rock almost completely replaced by finely crystalline quartz
Iqa	Grits – coarse augen grits & augen quartzites, kaolinized feldspar clasts, pyritic and generally veined by quartz
Ibs	Sideritic zones – generally replacing quartzite horizons. Gossans resulting from weathering of sideritic zones. Symbol also used for Fe-Oxide rich breccia zones.

NOTE: As strength has been made through letter codes for rock units to correlate with rock units on regional geological map. Because of alteration and facies controls, several stratigraphic rock units are mapped here.

GEOLOGICAL LEGEND

- Dip and strike
- Foliation
- Flat-lying beds
- Q.V. Quartz veining
- Outcrop
- Contacts – defined, approximate
- Fault assumed
- Thrust fault
- Syncline
- Anticline
- BRX Brecciated Fe-rich gossan

GEOLOGY SYMBOLS

- Galena
- Sulphosalts (Jamesonite, Enargite)
- Sphalerite
- Rock assay Au Ag / Pb, Zn, Cu, Sb, As, Au, Ag

LEGEND

- Helicopter pad
- Hand trenches
- Diamond drill holes
- Zone of mineralization and hydrothermal alteration

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A. R. ARCHER
GEOLOGICAL
ENGINEER

FIG. 17
ARCHER, CATHRO & ASSOCIATES LTD

GEOLOGY

McMILLAN DEPOSIT
HYLAND JOINT VENTURE

SCALE IN FEET
1000 0 1000 2000 3000

UNCONTROLLED BASE MAP PREPARED BY HAND FROM GOVERNMENT AIR PHOTOS

To accompany report dated Nov, 1973

FORT RELIANCE MINERALS LTD.

68-1
68-6
Fort Reliance Drill Holes
68-5

ROY LAKE

HULSE (QUARTZ) LAKE

HJV CAMP 1973

ZONE 'A'

PORKER 1-56 CLAIMS
HYLAND JOINT VENTURE

OLD CUT GRID

ZONE 'D'

ZONE 'C'

ZONE 'B'

NORRANDA LAKE

LIARD RIVER CAMP

McMILLAN DEPOSIT

BASELINE

LR62
LR65
LR64

CREEK

MINE

BASELINE A

PYRITE

CLAIM LINE

FORT RELIANCE MINERALS LTD.

LIARD RIVER MINING CO. LTD.

60° 30'

62° 30'

GEOCHEMICAL SAMPLES

- Soil sample location
- Stream sediment (silt) sample location
- Rock sample location
- •70 Lead assay in ppm.

GEOLOGY SYMBOLS

- Galena
- Sulphosalts (Jamesonite, Enargite)
- Sphalerite

LEGEND

- (H) Helicopter pad
- Hand trenches
- Diamond drill holes
- Zone of mineralization and hydrothermal alteration
- Anomalous trend outlined by reconnaissance and grid sampling with lead response in soil greater than 50 ppm.

Association of Professional Engineers of the Yukon Territory
A. R. ARCHER
GEOLOGICAL
15th Nov./73
ENGINEER

FIG. 20
ARCHER, CATHRO & ASSOCIATES LTD.

LEAD GEOCHEMISTRY

McMILLAN DEPOSIT
HYLAND JOINT VENTURE

SCALE IN FEET
1000 0 500 1000 2000

UNCONTROLLED BASE MAP PREPARED BY HAND FROM GOVERNMENT AIR PHOTOS

To accompany a report dated Nov, 1973

FORT RELIANCE MINERALS LTD.

PORKER 1-56 CLAIMS
HYLAND JOINT VENTURE

FORT RELIANCE MINERALS LTD.

LIARD RIVER MINING CO. LTD.

Fort Reliance Drill Holes
68-1
68-6
68-5

HULSE (QUARTZ) LAKE
NORANDA LAKE
ROY LAKE
CREEK
MINE
PYRITE
CLAIM LINE
BASELINE A
BULLDOZER TRAIL
OLD CUT GRID
HJV CAMP 1973
LIARD RIVER CAMP
McMILLAN DEPOSIT

ZONE 'A'
ZONE 'B'
ZONE 'C'
ZONE 'D'

LR 62
LR 63
LR 64
LR 65

68N
66N
64N
62N
60N
58N
56N
54N
52N
50N
48N
46N
44N
42N
40N
38N
36N
34N
32N
30N
28N
26N
24N
22N
20N
18N
16N

60° 30'
127° 55'

GEOCHEMICAL SAMPLES

- Soil sample location
- X Stream sediment (silt) sample location
- Rock sample location
- 130,135 Assays for zinc, molybdenum and copper, respectively, in ppm. Molybdenum assays below the detection limit of 1 ppm are shown as '-'.

GEOLOGY SYMBOLS

- Galena
- Sulphosalts (Jamesonite, Enargite)
- Sphalerite

LEGEND

- (H) Helicopter pad
- Hand trenches
- Diamond drill holes
- Zone of mineralization and hydrothermal alteration
- Weakly anomalous areas in zinc and molybdenum thought to be caused by higher rock background.

Association of Professional Engineers of the Yukon Territory
A. R. ARCHER
GEOLOGICAL
15 Nov 73
ENGINEER

FIG. 21
ARCHER, CATHRO & ASSOCIATES LTD
ZINC, MOLYBDENUM & COPPER GEOCHEMISTRY
McMILLAN DEPOSIT
HYLAND JOINT VENTURE

SCALE IN FEET
-1000 0 1000 2000 3000

UNCONTROLLED BASE MAP PREPARED BY HAND FROM GOVERNMENT AIR PHOTOS.

To accompany a report dated Nov, 1973

FORT RELIANCE MINERALS LTD.

PORKER 1-56 CLAIMS
HYLAND JOINT VENTURE

FORT RELIANCE MINERALS LTD.

LIARD RIVER MINING CO. LTD.

68-1
68-6
Fort Reliance Drill Holes
68-5

HULSE (QUARTZ) LAKE
NORANDA LAKE
ROY LAKE
CREEK
McMILLAN DEPOSIT
MINE
PYRITE
LIARD RIVER CAMP
LR62
LR63
LR64
R65
68N
66N
64N
62N
60N
58N
56N
54N
52N
50N
48N
46N
44N
42N
40N
38N
36N
34N
32N
30N
28N
26N
24N
22N
20N
18N
16N
14N
12N
10N
8N
6N
4N
2N
0N
2S
4S
6S
8S
10S
12S
14S
16S
18S
20S
22S
24S
26S
28S
30S
32S
34S
36S
38S
40S
42S
44S
46S
48S
50S
52S
54S
56S
58S
60S
62S
64S
66S
68S
70S
72S
74S
76S
78S
80S

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

WHITEHORSE, Y.T. 667-4415 685, TWO BENTALL CENTRE, VANCOUVER, B.C. 688-2568

POST OFFICE BOX 4127
WHITEHORSE, Y.T.

July 13, 1974

AFFIDAVIT

I, M.P. Phillips, with business address of Box 4127, Whitehorse, Y.T., hereby declare that, to the best of my knowledge and belief, the attached statement of expenditures is a fair and accurate representation of the cost of exploration on the Porker claims, claim sheet 95-D-5 & 12.

M.P PHillips

Signed before me at
Whitehorse this 13 day
of July 1974

Notary, Yukon

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

BOX 4127, WHITEHORSE, Y.T. Y1A 3S9 667-4415 BENTALL CENTRE, VANCOUVER, B.C. 688-2568

685 TWO BENTALL CENTRE
555 BURRARD ST.
VANCOUVER, B.C.
V7X 1G4

Porker Claims
Hyland Joint Venture
Statement of Expenditures
January 31, 1974

Helicopter		
Trans North Turbo Air Ltd. - 13.0 hours @ $130/hour	$1,690.00	
Fuel - 13.0 hours @ $20/hr	260.00	
		$1,950.00
Linecutters		
Eastern Associates Ltd. - 10 mandays @ $50/day.....	500.00	
2 days travelling @ $75/day	150.00	
		$ 650.00
Labour		
Field		
A.R. Archer - August 25; 1 manday @ $150/day.....	150.00	
R.J. Cathro - July 19, August 7; 2 mandays @ $150..	300.00	
M.P. Phillips - August 31; 1 manday @ $150.....	150.00	
B. Price - July 21, 22, 24, 25, 27; Aug. 23, 25; 7 mandays @ $75/day	525.00	
J. Slater - July 18, Sept. 12; 2 mandays @ $54/day.	108.00	
A. McLeod - July 18-25, 27-31, Aug.1-3, 5, 7, 9, 13, 15, 17, 18, 31, Sept. 5, 9, 12; 27 mandays @ $42/day	1,134.00	
M. Richards - Aug. 1, 3, 8; 3 mandays @ $39/day....	117.00	
D. Eaton - Aug. Aug. 15; 1 manday @ $37/day	37.00	
W. Styan - July 5, 18, 21, 23, 27, 29; Aug.3; 7 mandays @ $33/day	231.00	
I. Gibson - July 5, 24, 27, 29; Aug.3, 5; 6 mandays @ $39/day	234.00	
D. Cavers - July 18, 22, 24 ; 3 mandays @ $30/day..	90.00	
		$3,076.00
Office		
R.J. Cathro - 3 mandays supervision and report		$ 450.00

Assaying

Chemex Labs Ltd. - 317 samples @ $3.45 less 20% .....$	874.92	
Chemex Labs Ltd. - 60 samples assayed for gold @ $2.50 less 20%	120.00	
Assays and spectrographic analyses	350.50	
		$1,345.42
Total ----		$7,471.42

T
N
T

TRANS NORTH TURBO AIR LTD.

ATAC MEMBER

BOX 4338 PHONE 668-2177
WHITEHORSE, YUKON

TO:

Archer Cathro & Associates Ltd.
#2 Bentall Centre,
1475 - 505 Burrard Street,
Vancouver, B.C.

DATE August 1, 1973 INVOICE NO. 1982-3

P.O. NO.

RE: Four Month Contract Being May 25, 1973 to September 25, 1973 inclusive.

Bell 47G-3B-2 Helicopter

TO: Bill you with minimum charges for the month of August, 1973.

110.0 hours at $130.00 per hour	$ 14,300.00
INVOICE TOTAL	$ 14,300.00

N.B. To be adjusted to actual flying at month end if in excess of minimums.

June - CF-QJY - 94.2 Hours

TERMS: ONE PERCENT INTEREST PER MONTH WILL BE CHARGED ON ALL INVOICES NOT PAID WITHIN 30 DAYS OF DATE ISSUED.

STATEMENT

EASTERN ASSOCIATES REG'D
Box 4152
WHITEHORSE, YUKON

Aug. 25, 1973

Archer, Cathro & Associates,
Box 4127
Whitehorse, Yukon

"HYLAND PROJECT"

Aug. 3	Travel Whitehorse to Watson Lake	$ 75.00
Aug. 4	Watson Lake to camp	75.00
Aug. 5	5 to 9 = 5 days linecutting $50.00 per day (two men)	500.00
		$650.00

EASTERN ASSOCIATES REG'D

Roger Voisine

RV:vw

Hyland

Paid Sept #1/73 HTV #145 $650.00

CHEMEX LABS LTD. 212 BROOKSBANK AVE., NORTH VANCOUVER, B.C. TELEPHONE 985-0648

Archer Cathro & Assoc. Ltd.,

Box 4127

Whitehorse, Y. T.

DATE July 17/73

INVOICE NO. 9611

CERTIFICATE NO. 24992

ATTN:

ITEM	DESCRIPTION	SUB-TOTAL	TOTAL
	Proj. Hyland		
39	Analyzed for Copper, Molybdenum, Lead, Zinc & Arsenic @ $3.45	$134.55	
1	Analyzed for Copper, Molybdenum, Lead, Zinc, Arsenic & Gold $	5.95	
40	Prepared @ $0.20	8.00	
		148.50	
	Less 20%	29.70	
			$118.80

Paid July 23/73 HJV #116 $1008.25

TERMS — NET 30 DAYS

CHEMEX LABS LTD. 212 BROOKSBANK AVE., NORTH VANCOUVER, B.C. TELEPHONE 985-0648

Archer Cathro & Assoc. Ltd.,

Box 4127

Whitehorse, Y.T.

DATE July 12/73

INVOICE NO. 9613

CERTIFICATE NO. 25105 - 25107

ATTN:

ITEM	DESCRIPTION	SUB-TOTAL	TOTAL
84	Analyzed for Gold @ $2.50	$210.00	
	Less 20%	42.00	
			$168.00

TERMS — NET 30 DAYS

Assays + Spectrographic Analyses

Whitehorse Assay

June 28 –	27.00	
Aug. 2 –	152.50	
Aug. 12 –	30.50	
	30.50	
	15.00	
		255.50

Chimex Labs

July 12 –	26.00	
" –	69.00	
		95.00
		$ 350.50

STATEMENT

WHITEHORSE ASSAY OFFICE LTD
P. O. BOX 4518
WHITEHORSE, YUKON TERR.

DATE June 29 19 7

Archer x Cathro

(HYLAND ACCOUNT)

DATE	DETAILS	DEBIT	CREDIT	BALANCE
		$	$	$
June 28	7643-4 Ag Pb Zn	11.50		
	3 Au Ag Pb @ 9.00	27.00		
	less 10%		3.85	
June 25	1 quart 10% HCl	.25		
	4-4oz bottles charged for (203 bottles)	.64		
		39.39	3.85	
	Total Due			$ 35.54

Paid July 6/73 HCl #112 $35.54

1 PER CENT INTEREST PER MONTH ON OVERDUE ACCOUNTS

Rediform 8M101

STATEMENT

WHITEHORSE ASSAY OFFICE LTD
P. O. BOX 4518
WHITEHORSE, YUKON TERR.

DATE August 6 19 73

Archer x Cathro

(HYLAND ACCOUNT)

DATE	DETAILS	DEBIT	CREDIT	BALANCE
		$	$	$
June 29	Statement	35.54		
July 5	7659-2 2 Au Ag Pb Zn Cu @ 16.50	33.00		
July 6	7663-4 4 Au Ag Pb Zn Cu @ 16.50	66.00		
July 10	cheque # 112		35.54	
Aug 2	7753-6 Au Ag Pb Zn	13.50		
	5 Au Ag Pb Zn Cu Sb As @ 30.50	152.50		
	less 10% on assays		26.50	
		300.54	62.04	238.50
	Total Due			$ 238.50

Paid Aug 13/73
Aug 1 HCl #113 $ 13.50
Aug 2 HCl #114 $ 39.50

1 PER CENT INTEREST PER MONTH ON OVERDUE ACCOUNTS

Rediform 8M101

STATEMENT

WHITEHORSE ASSAY OFFICE LTD.
P. O. BOX 4518
WHITEHORSE, YUKON TERR.

DATE October 1 19 73

Archer + Cathro

HYLAND ACCOUNT

DATE	DETAILS	DEBIT		CREDIT		BALANCE	
		$		$		$	
Aug-6	Statement	238.	50				
Aug-12	7808-2 Rush Cu Co	12.	50				
	Rush Fbr Cu 56-A5	30.	50				
Aug-16	7818-1 Rush Fbr Cu 56 A5	30.	50				
Aug-23	Cheque # 133			238.	50		
Sept-6	7865-1 Rush Fbr Cu	15.	50				
	Less 10% on assays			2.	70		13
	SPECTROGRAPHS:						
73-16	7773-6 #00363	15.00		Paid		291	
73-24	7808-2 #00366			Aug		276	
73-25	7808-2 #00367			27		306	
73-24	7863-4 #00328			15		136.	30
	4 Spectro. @ 15.00	60	00				
		385.	50	247.	20	138.	30
Total Due						$ 138.	30

1 PER CENT INTEREST PER MONTH ON OVERDUE ACCOUNTS

INVOICE

CHEMEX LABS LTD. 212 BROOKSBANK AVE., NORTH VANCOUVER, B.C. TELEPHONE 985-0648

Archer Cathro & Assoc. Ltd.,

Box 4127

Whitehorse, Y. T.

DATE July 12/73

INVOICE NO. 9606

CERTIFICATE NO. SP 29

ATTN: Mr. A.Archer & Mr. B. Cath

ITEM	DESCRIPTION	SUB-TOTAL	TOTAL
	H.J.V.		
2	30 Element semiquantitative analysis @ $13.00	$26.00	
			$26.00

TERMS—NET 30 DAYS

INVOICE

CHEMEX LABS LTD. 212 BROOKSBANK AVE., NORTH VANCOUVER, B.C. TELEPHONE 985-0648

Archer Cathro & Assoc. Ltd.,

Box 4127

Whitehorse, Y. T.

DATE July 12/73

INVOICE NO. 9615

CERTIFICATE NO. 22235

ATTN: Mr. A. Archer & Mr. B. Cathro

ITEM	DESCRIPTION	SUB-TOTAL	TOTAL
	H.J.V.		
3	Assayed for Copper, Lead, Zinc, Arsenic, Silver & Gold @ $23.00	$69.00	
1	Assayed for Lead, Zinc, Silver & Gold	13.25	
			$82.25

Hyland

TERMS — NET 30 DAYS

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

WHITEHORSE, Y.T. 667-4415 685, TWO BENTALL CENTRE, VANCOUVER, B.C. 688-2568

POST OFFICE BOX 4127
WHITEHORSE, Y.T.

STATEMENT OF QUALIFICATIONS

I, Alan R. Archer, with business addresses in Whitehorse, Yukon Territory, and Vancouver, British Columbia, and residential address in South Burnaby, British Columbia, do hereby certify that:

1. I am a consulting geological engineer.

2. I graduated from the University of British Columbia with a B.A.Sc. in Geological Engineering in 1957.

3. I am a registered Professional Engineer in British Columbia and Yukon Territory.

4. From 1957 to 1966 I was engaged in mineral exploration in Canada as a geologist for a number of companies. I was Chief Geologist for United Keno Hill Mines Ltd. when I retired to private practice in 1966.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES LTD.

Alan R. Archer

Alan R. Archer, B.A.Sc., P.Eng.