



MEMORANDUM

NOTE DE SERVICE

TO
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Dr. D.C. Findlay
Director, Economic Geology and
Mineralogy Division

FROM
DE

R.V. Kirkham

SUBJECT
OBJET

A possible GSC lithochemical project in the Mitchell-Sulphurets area, British
Columbia - a preliminary discussion

SECURITY - CLASSIFICATION - DE SÉCURITÉ
OUR FILE - N / RÉFÉRENCE
YOUR FILE - V / RÉFÉRENCE
DATE March 7, 1986

Under the present, unusual economic conditions, exploration companies are focussing almost entirely on gold. Unfortunately, at present the GSC has very little work directed towards gold in the Cordillera. In an attempt to rectify this deficiency, I have been trying to think of useful projects that could be initiated by the GSC in the near future. A project in the Mitchell-Sulphurets area emphasizing lithochemistry seems to offer much promise.

The Mitchell-Sulphuret district (my M.Sc. thesis area) contains a "mildly alkaline" porphyry copper system with numerous associated gold (silver) and minor molybdenum showings that are probably Early Jurassic in age. The geology of the area is very complex ^{and} is largely unresolved ^{the area} contains numerous large pyritic alteration zones (see gossans on attached map) and is cut by some perplexing regional structures, some of which have associated regional alteration zones.

Exploration in the early 1960s concentrated on copper and, to a lesser degree, molybdenum. Precious metals became of interest in the 1970s and recent exploration has concentrated on them. The area is well mineralized and, undoubtedly would have received much more attention, if were not for the fact that it is a very difficult area in which to operate and has very poor potential mine access. Nevertheless, recent exploration has met with some success and interest in the area is high. The district has some similarities with the McIntyre-Hollinger area in Ontario.

The widespread alteration, locally extensive intense penetrative deformation, perplexing regional structures, and the "invisible" nature of some the gold mineralization in large pyritic zones have hindered exploration. A carefully controlled, systematic lithogeochemical survey could be of value for exploration in the area and could help define metal and element distributions in a large porphyry-type alteration zone, which would be of general interest.

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The proposed project consists of the following components: 1) emphasis on lithochemistry, possibly to be carried out and supervised by Bruce Ballantyne(?); 2) orientation surveys to be carried out in summer of 1986 (about 3 weeks?); 3) R.V. Kirkham to spend about 2 weeks(?) with Bruce to help with geological setting and furthering a general interest in zonal distribution of metals in a Au-rich porphyry Cu system and its petrologic (petrochemical) associations; 4) liaison with Bob Anderson doing regional geology; 5) Dani Alldrick of the BC MEMP plans detailed mapping in the area in 1987 which could be very useful and timely for co-ordinating with the lithogeochemical survey; 6) presumably if orientation surveys are successful a larger scale systematic survey would be carried out in the summer of 1987; 7) in 1987 R.V. Kirkham might be able to help resolve some of the perplexing regional structures by spending a small amount of time working at a scale intermediate between Dani Alldrick's deposit-scale studies and Bob Anderson's regional-scale studies.

This project hopefully would have the support of the Survey, B.C. Ministry of Energy, Mines and Petroleum Resources, and exploration companies working in the area and hopefully would yield some interesting, useful, and timely results.



R.V. Kirkham

cc.: B. Ballantyne

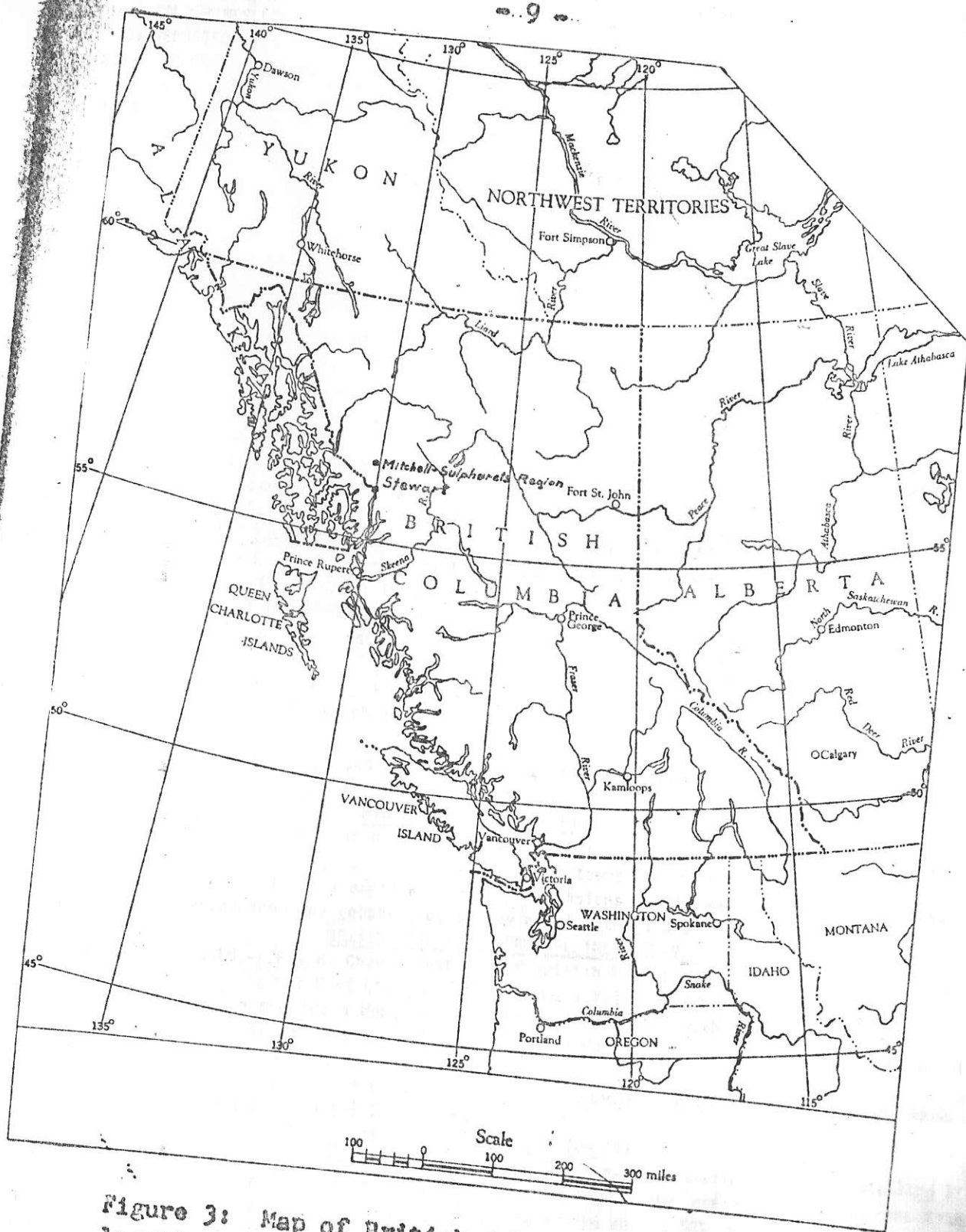


Figure 3: Map of British Columbia showing the location of the Mitchell-Sulphurets Region.

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1:250,000

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John Peaks

MT MADGE

UNUK FINGER MTN

MT PEARSON

MT BERENDON

MT WILLIBERT

MT MIDDLETON

MT BLAINE

MT KNIPPLE

Brucejack Lake

Ice

Glacier

Frank

Mackie

McQUILLAN RIDGE

Third Canyon

Tom Mackay Lake

Donnerville Sedimentary Rocks

Donnerville Volcanic Rocks

Gossan

Alkaline Int.

Sketch of Geology Mitchell-Sulphurets & Surrounding Region, B.C.
From memory - Rvk Mar. 6/86

Down the
Volcano
Rocks

G = Gossan
howe Int.
Alkaline Int.

Sketch of Geology Mitchell-Sulphurets
& Surrounding Region, B.C.
(From memory - R.V.K. Glau. Mar. 6/66)

NEWHAWK GOLD MINES LTD. (NHG-V) LACANA MINING CORPORATION (LCA-T) GRANDUC MINES LIMITED (GDC-V)

UPGRADE RESERVES REPORTED - In the Brucejack area of the Sulphurets property, 35 miles northwest of Stewart, B.C., FROM DRILL PROGRAM mineral reserves of over 1,000,000 tonnes grading 0.826 oz/tonne gold equivalent over a 12 foot average width have been indicated by the Newhawk/Lacana joint venture ((SEE MAP OVERLEAF). Fill-in drilling will be needed to define the tonnage and grade. Drilling on the new Gossan Hill Zone has given 25,091 tonnes grading 2,209 oz/tonne gold equivalent.

While 15 zones of mineralization have been previously identified, the 1985 program concentrated on two mineralized structures, the West and Gossan Hill zones. Drilling on the West Zone gave spectacular intersections, such as 1.97 oz/ton gold, 260.96 oz/ton silver and 0.90 oz/ton gold, 65.13 oz/ton silver over 14 feet. The two holes drilled on the Gossan Hill Zone, the first drilling in this area, each returned sensational intersections: 10.93 oz/ton gold, 11.96 oz/ton silver over 4 feet and 1.66 oz/ton gold, 4.16 oz/ton silver over 2 feet.

The Snowfields Zone had not been drilled prior to 1985, and tonnage indications were based on results of 24 surface trenches totalling 625 feet. Limited drilling (five holes) on this bulk tonnage target has indicated over 7,000,000 tonnes grading 0.083 oz/tonne gold of the anticipated minimum 20,000,000 tonnes. All drill holes bottomed in mineralization. It is expected that the total mineral inventory in the two bulk tonnage targets, the Snowfields and Sulphurets Breccia Zones, will contain approximately 40,000,000 tonnes grading 0.08 oz/tonne gold.

A major exploration and development program has been recommended for 1986. Additional staking by Newhawk/Lacana has brought the area covered to a total of 343 units or 33.11 square miles. Under the joint venture Lacana and Newhawk can each earn a 30% interest in the property by spending \$2,000,000 over five years with Granduc retaining of 40% interest carried through the expenditure. (SEE GCNL NO.163, P.2, AUG 23, 1985 FOR SOME DETAIL AND NO.192, P.2 OCT.4, 1985 FOR DRILL HOLE ASSAYS, ALSO NO.221, P.5, NOV.18, 1985 FOR FINANCING).

NORTHAIR MINES LTD. (NRM-V,T)

CALNOR RESOURCES LTD. (CUU-V)

FLOW-THROUGH FUNDS NEGOTIATED - Northair Mines Ltd. has announced a private placement of flow-through shares with Flowthrough Mineral Explorations 85-1 Limited Partnership which provides that the Partnership is committed to fund \$450,000 at \$1.90 per share for 236,842 shares.

Northair will incur exploration expenses on or before 28Feb86 on Willa Project, located near New Denver, B.C. on the underground diamond drilling to define known mineralization.

Calnor Resources Ltd. has announced a private placement of flow-through shares with Flowthrough Mineral Explorations 85-1 Limited Partnership which provides that the Partnership is committed to fund \$100,000 at 58¢ per share for 172,414 shares.

Calnor will incur exploration expenses on or before 28Feb86 on the High Lake property, located near Kenora, Ontario.

MIDNAPORE RESOURCES INC. (MPS-V)

DRILLING STARTS - Ron Bieber, president of Midnapore Resources Inc., has been advised by their consultant that a DRILL RIG IN QUEBEC CLAIMS drill rig has been moved onto their Hebecourt township property in NW Quebec for drilling to start on 16 December to test depth and lateral extensions of the main known quartz-carbonate vein as well as the major share zone inferred from the geophysical survey and located a short distance north.

BRITISH PACIFIC FINANCIAL INC. (BTF-V)

SHARE SPLIT 4-NEW=1-OLD PROPOSED - Fai H. Chan, president of British Pacific Financial Inc., reports that BPR Holdings Far East Ltd., which is to be a fully owned subsidiary of British Pacific Financial Inc., is entering negotiations to acquire a Hong Kong public listed company with current assets of some HK\$40,000,000 by leveraged buyouts financing. The aim is to enable the British Pacific group of companies to consolidate all their South East Asia business activities in the Hong Kong company.

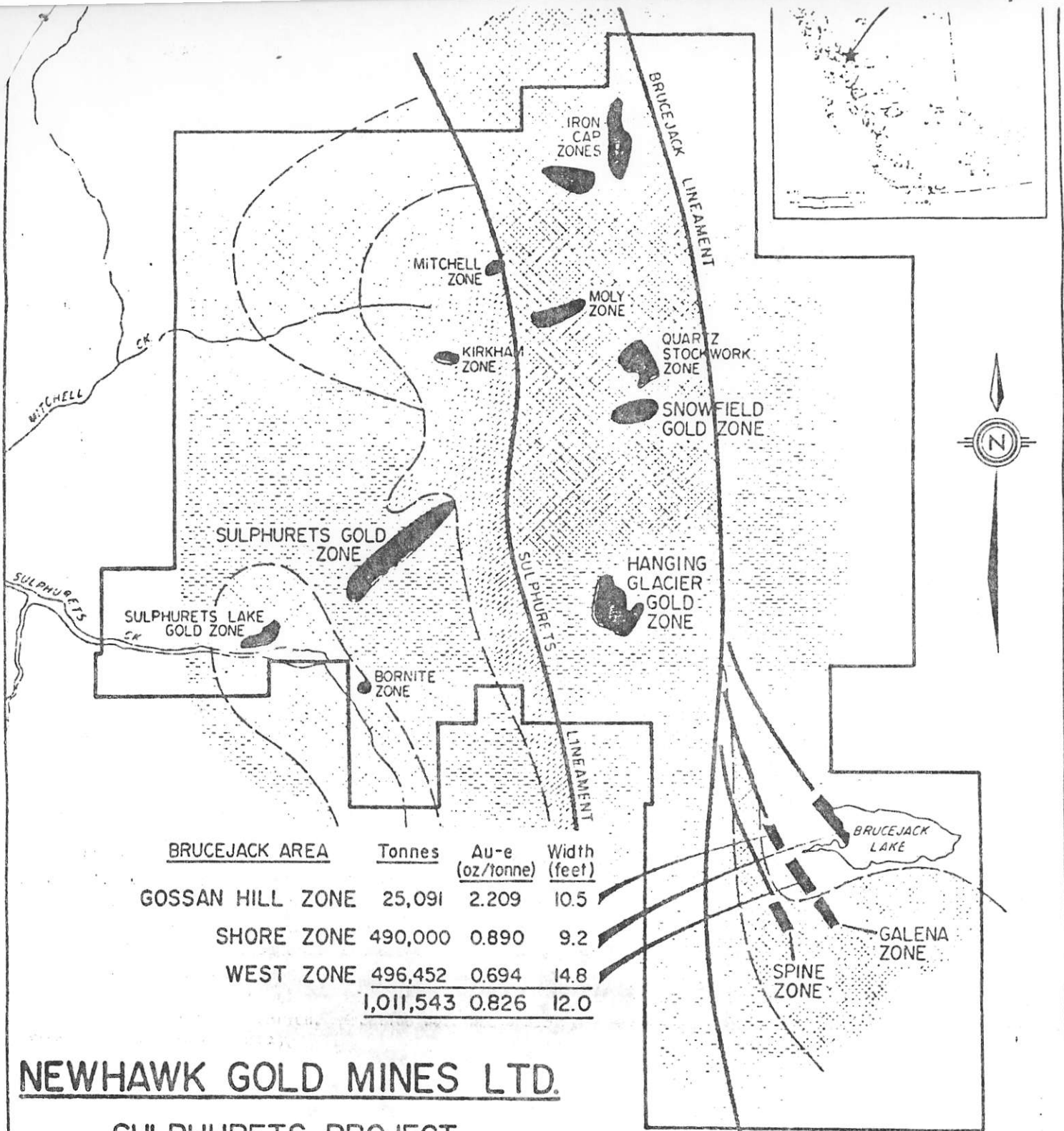
An extraordinary meeting of shareholders of British Pacific Financial Inc. will be called for 2Jun86 at which they will be asked to approve a proposed 4-new for 1-old share split.

TYLOX RESOURCES CORPORATION (TYX-V)

TWO DRILL PROGRAMS UNDERWAY - Tylox Resources Corporation has entered two exploration programs totalling \$1,500,000 with Noranda Exploration Co. Ltd. Tylox has farmed out it's Homlo/Theresa Lake property to Noranda. After \$750,000 is spent over a four year period, Noranda can earn a 50% interest.

Coincident VLF-EM, induced polarization and geochem surveys on this property have delineated three anomalous parallel zones which run North-West/South-East across the property. The zones host a 150 foot wide felsic unit similar to the horizon that contains the Golden Giant deposit. Geochemical studies have confirmed sulphide mineralization containing gold values. The first stage drill program will be completed on this property prior to the 1985 year end.

In the second agreement, Noranda has farmed out it's Red Lake property, consisting of 3 contiguous properties comprising 53 claims, located in the Campbell Red Lake mining camp. After \$750,000 is spent over a four year period, Tylox can earn 50% of Noranda's interest. The property has five known mineralized horizons. In 1983, Noranda drilled four different structures. Three of the drill holes intersected gold mineralization with the best hole averaging 0.57 oz/ton gold over approximately 10 feet and located in the center of an EM conductor that has a length of at least 2,700 feet. Prior to the 1985 year end, a drill program will be completed to test additional potential zones for gold mineralization. It is anticipated that, in early 1986, a drill program will follow up on the previously drilled zone.



NEWHAWK GOLD MINES LTD.

SULPHURETS PROJECT MINERAL ZONES

MILES 0 1/2 1 2 3

DEC 1985