

## CORPORATION FALCONBRIDGE COPPER

MEMORANDUM

DATE: May 14, 1982  
A TO: B. D. Simmons  
COPIES A COPIES TO: M. J. Knuckey  
DE FROM: P. W. A. Severin  
SUJET SUBJECT: NEW MOON PROSPECT - SMITHERS AREA, B.C. NTS 93E/13E,W  
GREAT WESTERN PETROLEUM CORPORATION

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SUMMARY

The New Moon property, located 100Km SSW of Smithers, B. C., is underlain by volcanoclastic rocks of basaltic to rhyolitic composition that were deposited in a sub-aerial to sub-aqueous environment in Lower Jurassic (185my) time. Massive sulphide (Cp, Cp-Sph, Sph-galena) float boulders have been discovered in terminal and medial moraines of a glacier on the north-facing slope of a prominent valley. It is thought that the source (mother-lode) of the boulders lies beneath the glacier rather than on the valley floor (no EM response). Geophysical work to date - airborne magnetometer, airborne VLF, limited ground HEM - has not provided much encouragement.

A property visit would not be of much use before mid-July due to the heavy snow conditions.

The geology and nature of the mineralization found to-date is interesting and deserves further investigation however, the exploration logistics seriously detract from this prospect. There may be other properties with equal or higher technical merit located in more accessible areas that we should be considering.

No action is recommended at this time.

I left a note for Nick Carter indicating that one of us would respond on or before June 15, 1982.

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## INTRODUCTION

During the course of compiling data on B.C. geology, brief discussions were held with several B.C. government geologists. Dan Aldrich, B.C. government geologist, indicated that Great Western Petroleum Corporation was involved in massive sulphide oriented exploration and suggested that I contact Nick Carter. A letter (March 29, 1982) was sent to Dr. Carter indicating C.F.C.'s interest in massive sulphide projects. Nick Carter's response was to offer us participation in their New Moon massive sulphide prospect in the Smithers area of Central, B.C.

All available data pertaining to the New Moon Prospect was reviewed in Great Western Petroleum's Vancouver office on May 4, 1982. The result of this data review is the subject of this report. The majority of this data summary is from a 1978 report by Garratt and Bojczyszyn of Great Plains Development Company of Canada Limited.

## LOCATION AND ACCESS

The New Moon property consists of 4 claims totalling 52 contiguous units on the eastern margin of the Coast Range approximately 100Km SSE of Smithers, B.C. or 85Km SW of Houston (Fig. 1).

Access to the property is by 74Km of all weather gravel road from Houston to the NE end of Morice Lake - then by a 27Km helicopter ferry to the property.

The property is located in alpine terrain in a glacial valley at 1500-1600 metre elevation. Morice Lake lies at 790 metre elevation. The glacial till filled valley leads up to talus covered slopes and steep cliffs. A relatively flat plateau-like ridge circles the valley. Vegetation is sparse and consists of a variety of alpine flowers, heather and stunted conifers.

The area receives approximately 20 feet of snow annually and year-round snow pack exists on north facing slopes. A small glacier exists in a northeast facing compound cirque.

If a mine was to be developed in this area, access to the property could be gained by barge from the Morice Lake road to Atna Bay. A road could be built from there, up the main valley. Power would likely have to be derived locally.

It is likely little environmental damage would be incurred by mining or milling however, the mine and mill wastes would have to be isolated from the Morice River drainage system since it is a major salmon spawning system.

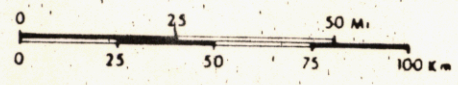
## HISTORY

Cu-Pb-Zn-Ag Vein Type Mineralization located 1300 metres NNW of immediate area of interest (Fig. 2):

1967-68	Phelps Dodge Corp. Geology and chip samples in 9 trenches (692')
1969	Silver Standard Geologist, Charles Kowall Prospecting and staking claims



FIGURE 1  
 LOCATION AND ACCESS MAP  
 NEW MOON OPTION



Omneca M.D. Scale 1:2 000 000  
 NTS 93E/13E+W. T. Boiceyann  
 Sept 1978

- 1971 Aggressive Mining Limited  
Geological mapping 1" = 400'  
Crone JEM 2 frequency - coil separation 200'  
- 6 lines at 50' intervals totalling 5000'
- 1972 Aggressive Mining  
Mag. and EM  
Geological sampling (soils?)  
150' of trenching  
1025' of diamond drilling on JOW 4  
Claims JOW 1 to 20
- 1977 Charles Kowall  
Prospecting  
Staking of Misty Day (12 units)  
Copper Cliff (12 units)  
New Moon (20 units)
- 1967-1977 Exploration by Phelps Dodge and Aggressive Mining  
centred on fault controlled vein mineralization on the  
plateau area at the north end of the property. The  
vein system consists of quartz networks with mineralized  
veins and patches that apparently averaged 0.15% Cu,  
1.75% Pb, 5.5% Zn and 0.59oz/T Ag over 35' as defined  
by four diamond drill holes. The zone dips at 65° to  
the east and a feldspar porphyry dyke parallels the  
system. Trenching indicates a strike of 1000 feet which  
has been tested by diamond drilling over a 600 foot  
length.

### Massive Sulphide Float

- 1978 Great Plains Development of Canada and Aquitane Co. of  
Canada, Joint Venture  
Prospecting 1:5000  
Mapping 1:2000  
EM Max Min III 17Km. (HEM Apex Parametrics Max Min III)  
Fluxgate Mag. 16Km.  
Secanting of lines-topo survey 1:2000  
Staking of 8 units - Half Moon.  
Limited soil geochem.

Great Plains Development initiated a prospecting and limited geological mapping program in the area and discovered massive sulphide float in end and medial moraines approximately 1300 metres SSE of vein minz'n. This discovery prompted geophysical surveys and directed their efforts to glaciology. The float mineralization was traced to a tentative source lying beneath a glacier.

Geophysical Surveys: a grid was established on the valley bottom and lines run to the highest accessible points on the slopes. A total of 16Km of grid was established with 18 lines at 100M spacings and stations at 25 metre intervals. The baseline was established at an azimuth of 300 degrees.  
The mag. survey located a long linear magnetic anomaly 2000-3000  $\gamma$  across the length (100M X 1300M) of the grid. This anomaly is

thought to be caused by magnetite bearing dioritic dykes that are associated with a major fault zone.

In addition to the main grid, two lines of HEM were also surveyed on the plateau area, (1300 metres to the north) in an effort to delineate the known vein system. No conductors were located. Due to poorly developed soils in the area, the soil geochem. survey was of very limited value. One area of sandy soil cover on a glacial terrace was chosen for the survey. Thirty two samples were analysed for Pb, Zn, Cu, Ag, and Au. Three of the samples showed anomalous values.

- 1981 - Great Western Petroleum optioned the property from Charles Kowall of Whale Town, Cortes Island, B.C.
- Airborne magnetometer and VLF surveys flown by Western Geophysical Aero Data Limited (105Km)
    - 26 lines flown NE-SW at an average terrain clearance of 100M
    - proton precession mag. and two VLF EM receivers
    - bird 50 feet below the helicopter
    - communications stations: Jim Creek, Washington (18.6 Khz)  
Annapolis, Maryland (21.4 Khz)
    - measuring total magnetic field and total horizontal EM field
    - only very weak VLF-Em responses were detected i.e. 10% above background and within noise levels expected in rugged terrain
    - three magnetic trends were located and are thought to be related to narrow vein-like sources.
    - it is likely that the VLF system can not penetrate the glacial ice pack
    - a ground survey was suggested but it was stressed that logistical problems would be significant!

Great Western Petroleum is currently seeking outside participation in this prospect.

#### CLAIM STATUS

<u>Claim Name</u>	<u>No. of Units</u>	<u>Date Recorded</u>
New Moon	20	Oct. 21, 1977
Copper Cliff	12	"
Misty Day	12	"
Half Moon	8	Aug. 12, 1977

All claims in good standing until October 1983. Half Moon is in good standing until August 1984.

#### GENERAL GEOLOGY

The area is underlain by the Telkwa Formation which is part of the Lower Jurassic (185 MY) Hazelton Group. The lithology consists of red, maroon, grey, green tuff, breccia and flows of basaltic to rhyolitic composition and lesser volcanic conglomerate, red mudstone, red siltstone and argillite.

The volcanics have been intruded in the south by Early Jurassic Topley Intrusions which consist of porphyritic, pink, quartz monzonite, granodiorite and quartz

monzo-diorite.

Initial prospecting on the New Moon prospect indicated that thin limestone beds intercalated with the volcanics and a marine succession was therefore implied. Work by Monger of the GSC suggests that the limestones were part of an intravolcanic sedimentary sequence and likely the result of fresh water deposition.

Lineaments, visible on landsat imagery, prolific dyke activity, coarse pyroclastic build-up and rhyolitic laccoliths combine to suggest a volcanic centre environment on the New Moon property.

The Hazelton volcanics are truncated by the Coast Plutonic Complex to the west.

#### LOCAL GEOLOGY

Detailed mapping has been carried out only on a part of the stratigraphic section near the south end of the grid. Prospecting and reconnaissance mapping including a definition of glacial features has been carried out on most of the property.

The property is underlain by volcanic flows and pyroclastic rocks of basaltic to rhyolitic composition with andesite predominant. Rhyolitic intrusive bodies cross cut the section and have been observed as laccoliths in the cliffs on the south facing valley walls. Rhyolites are generally porphyritic and light green in colour.

Basaltic to felspar porphyritic dykes generally strike NW and NE and dip to the west.

Quartz monzonite intrudes the SE corner of the property and is controlled by N to NW trending faults.

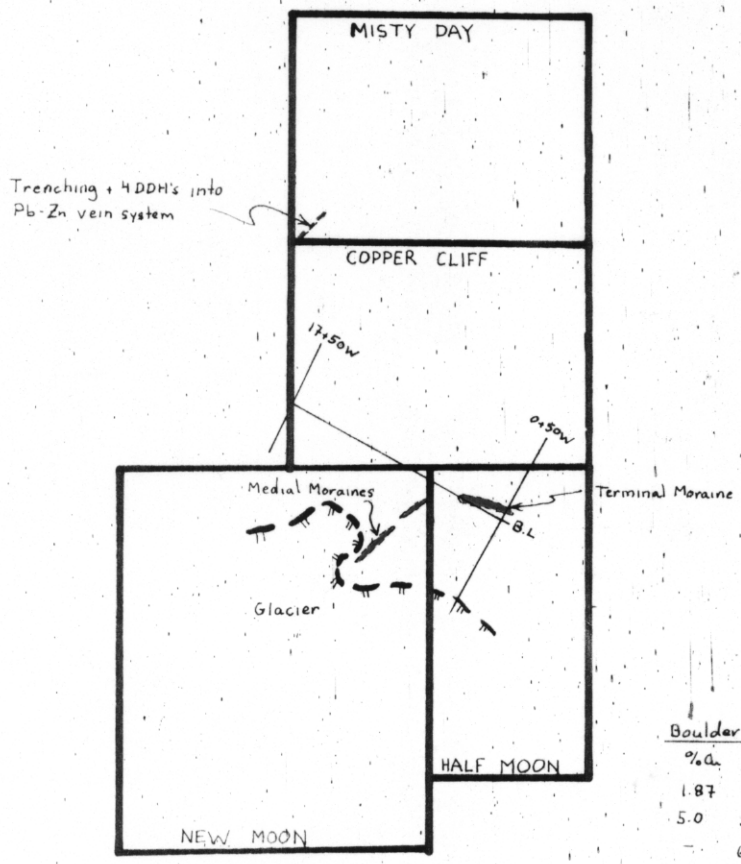
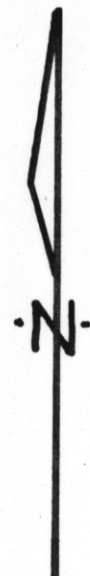
A great variety of pyroclastic material occurs on the property and varies from thinly bedded, sorted, fg tuffs to heterolithic, moderately sorted subaqueous breccias and coarse, unsorted volcanic breccias. Evidence of a subaqueous environment has been documented by the presence of normally graded tuffs, limestone and pillow breccias. It is likely that both terrestrial and shallow subaqueous deposition were taking place during the same period.

Alteration of mafic constituents to chlorite and kaolinitization of feldspars has been observed.

#### MINERALIZATION (As defined by Great Plains)

Type #1 Shear zone-dyke associated

- minor amounts of Cp-malachite disseminated along shear zones or associated quartz veins
- usually less than 5 metres in length
- alteration along shear zone: qtz, chl, ser, Kaolinite
- generally limited extent and low grade



Boulder Float from Moraines

%a.	%Pb	%Zn	gZn Ag
1.87	0.7	1.7	0.42
5.0	5.1	-	3.9
-	6.9	15.0	-
7.2	-	-	1.0
9.5	-	-	1.86

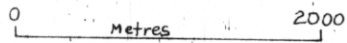


Fig. 2

## Type # 2 Massive Sulphide Float

- float mineralization in glacial morraines in the valley floor and lower slopes is widespread.
- mineralization is usually associated with a grey-white to grey-black siliceous material which is often brecciated and healed with sulphides
- sulphides - cp, specularite, sph, py, galena, silver (mineral?) magnetite and minor Au
- categories of minz'd boulders
  - a) Cp, specularite, magnetite
  - b) Cp, magnetite, minor sphalerite
  - c) Sph, galena
- samples in Nick Carter's office - Good-looking Stuff!!
  - #1 Sub-rounded-sub-angular Fe oxide stained boulder
    - 30 - 40% re-crystallized? Cp interstitial to galena-chlorite rich patches
    - Host: chloritic rhyolite
  - #2 Weak to moderately banded cherty exhalite? with "dusty" sph and coarser Cp bands.
  - #3 Sub-rounded to angular boulder showing poorly developed banding of Sph-Cp- (Py). Bands are disrupted and broken.

GREAT WESTERN OPTION PROPOSAL

- 1) Down payment of \$35,000 to cover \$20,000 in option payments (1981, 1982) and \$15,000 for work done.
- 2) Escalating yearly option payments to include a premium over and above Great Western's obligation to the original vendor.
- 3) Retained 20% Net Proceeds Interest.

Great Western's option agreement with Charles Kowell:

Option to purchase the claim group for \$1,012,500 which shall be paid as follows:

- a) \$10,000 on signing formal agreement (this has been paid)
- b) \$10,000 on or before Feb. 11, 1982
- c) \$10,000 on or before Feb. 11, 1983
- d) \$17,500 on or before Feb. 11, 1984
- e) \$30,000 on or before Feb. 11, 1985
- f) \$50,000 on or before Feb. 11, 1986
- g) \$150,000 on or before Feb. 11, 1987
- h) \$150,000 on or before Feb. 11, 1988
- i) \$185,000 on or before Feb. 11, 1989
- j) \$200,000 on or before Feb. 11, 1990
- k) \$200,000 on or before Feb. 11, 1991

CONCLUSIONS

The geology and nature of the mineralization found to-date on the New Moon



property is interesting and deserves further investigation however, the exploration logistics seriously detract from this prospect. The potential source for the massive sulphide float (the mother lode) is thought to lie beneath a glacier. Access to the glacier apparently is severely restricted by a great number of large crevasses and ground geophysical surveys cannot be carried out. The logistics of drilling would entail high cost, helicopter supported programs and there is some question as to whether a drill program could successfully be completed.

Great Western is seeking an operating participant. If one considers that C.F.C. has just recently begun a compilation of B.C. geology and mineral deposits, it is quite premature for C.F.C. to become involved in this type of project at this time. There may be other properties with equal or higher technical merit located in more accessible areas that we should be considering. We will be in a better position to set priorities in a year or so.

#### RECOMMENDATIONS

No action is recommended at this time.

Respectfully submitted,



P. W. A. Severin