6280

WELCOME NORTH MINES LTD. (N.P.L.)
1027-470 Granville St., Vancouver, B.C. V6C 1V5 Telephone (604) 687-1658

GEOLOGICAL, GEOPHYSICAL AND PRELIMINARY METALLURGICAL REPORT

ON THE

FALCON MINERAL CLAIMS

N.T.S. 93-O/11W

PINE PASS AREA, B.C.

Latitude 55°42'N Longitude 123°20'W

OMINECA MINING DIVISION

APRIL 7 - SEPTEMBER 30, 1976

Compiled By

John S. Brock

April 1, 1977

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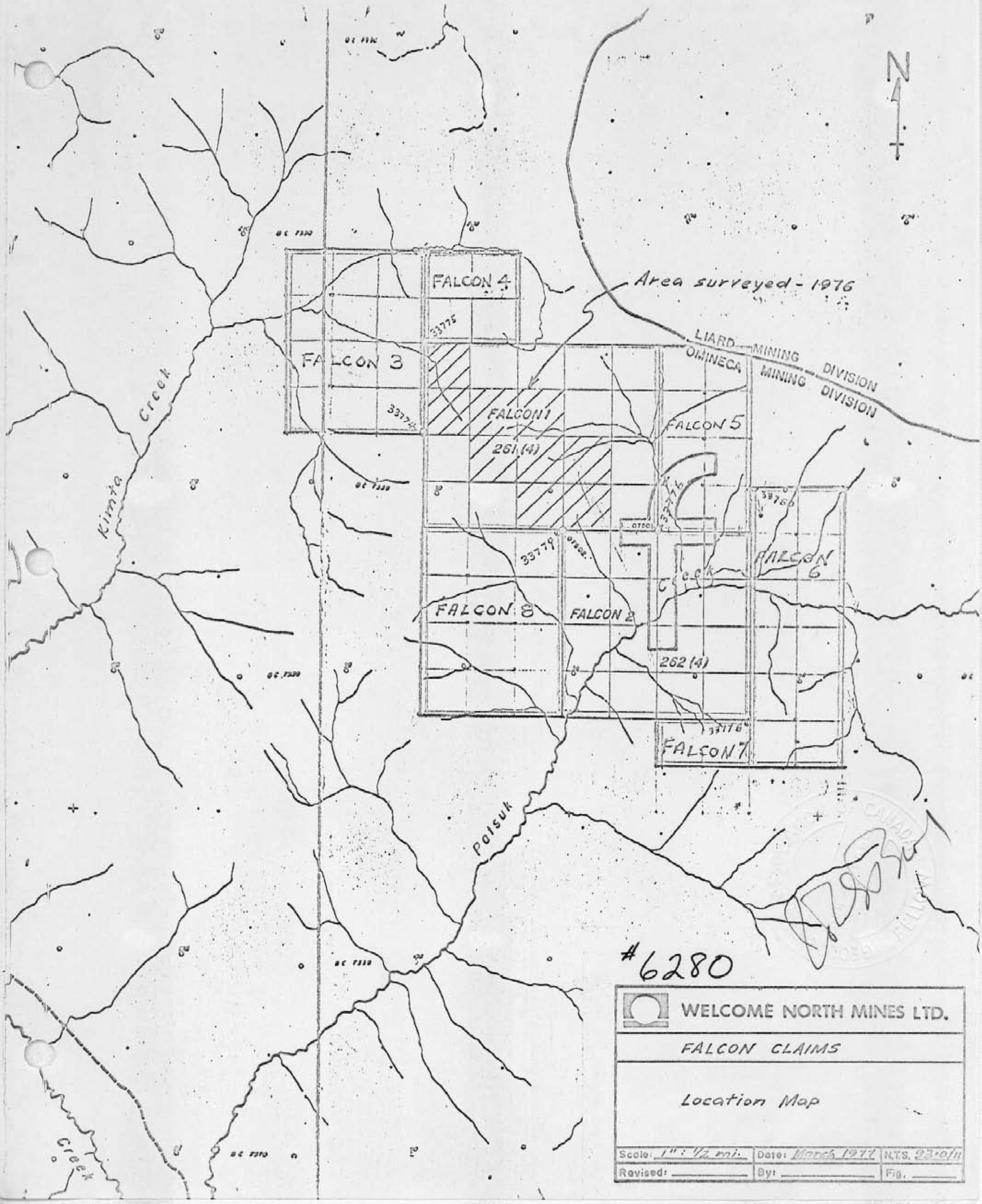

#6280

WELCOME NORTH MINES LTD.

FALCON CLAIMS

Location Map

Scale: 1" : 1/2 mi.	Date: March 1977	N.T.S. 93-0/11
Revised:	By:	Fig.

INTRODUCTION

Mineralized outcrops of magnetite and lesser amounts of hematite were first discovered in late 1975 by Mr. Al Potter while he was engaged in a general prospecting program in the Pine Pass area. In March, 1976, an agreement was made between Potter and Welcome North Mines whereby Potter transferred all his interest in the property in the area to a Joint Venture. Under this Joint Venture, Welcome North Mines Ltd. and Ventures West Capital Ltd. became equal partners in exploration of the deposit and surrounding area of favourable geology.

The FALCON iron deposits were staked in April, 1976, comprising two adjoining claims of 20 and 16 units each. Upon recording of the claims, title was transferred to Welcome North to be held by Welcome North while the agreement is in effect. Welcome North acts as Operator for the Pine Pass Iron Project.

Exploration work during the 1976 field season consisted of additional protective staking, geologic mapping, magnetometer profiling and bulk sampling for metallurgical purposes. Initial results indicate a potential for mineable reserves of iron ore and further work on the property is recommended.

LOCATION AND ACCESS

The FALCON claims are located in the Omineca Mining Division (N.T.S. 93-O/11W) at the headwaters of Patsuk Creek. The nearest supply point is the town of Mackenzie, B.C., which is located 25 miles south of the property. Mackenzie is serviced by rail and highway, and has airstrip facilities. A helicopter, available for casual charter, is based at Mackenzie. All-weather road access reaches to within 6 miles of the FALCON property, however at this time the most convenient access to the property is by helicopter from Mackenzie.

CLAIMS

Claim Name	Record No.	Recording Date	Due Date
FALCON 1-2	216-262	April 12, 1976	April 12, 1977
FALCON 3-8	389-394	Aug. 3, 1976	Aug. 3, 1977

PROPERTY EXAMINATION BY W.M. SHARP, P.ENG.[1]

In April, 1976 Mr. Sharp spent a week examining the property and carrying out a magnetometer survey of a one-mile long northwesterly interval of the mineralized zone. The iron occurs in two approximately parallel bands of mineralization spaced from 60 to 150 meters apart. Both bands, ranging from 30 to 90 meters in width, were traced over a strike length of approximately 15 kilometers. Preliminary indications suggest that the tonnage is almost 50 million tons per 150 meters of depth. The general depth continuity of the mineralization is assured by reason of its sedimentary origin or relationship. Character samples taken by Mr. Sharp yielded assays between 30% and 40% iron. Previous selective samples by Potter assayed 57% to 63% iron.

The probable strike length within the property itself is at least 15 kilometers, and widely separate strike-related exposures indicate that the mineralization possesses regional continuity. The regional strike length of the particular Precambrian formational unit is closely similar to, and of the same age as that containing the two billion ton CREST deposit within the northern Yukon. Consequently, the potential of finding additional iron in the area appears excellent.

[1] Ref. Appendix A - Preliminary Examination of the FALCON Iron Property, W.M. Sharp, April 26, 1976.

TEST RESULTS BY H.E. NEAL & ASSOC.[2]

Test work by H.E. Neal & Assoc. indicates that the concentrate produced is of superior quality and that the recovery of magnetite is very good. One ten-pound sample with a grade of 42.7 percent soluble iron was ground to approximately 65 percent minus 325 mesh and then put through a Davis tube. Soluble iron recovery was close to 80 percent; but even more important, the concentrate produced was 71.8 percent iton. Since pure magnetite contains 72.4 percent iron, the concentrate produced is 99 percent magnetite. Another sample with a grade of 57 percent soluble iron yielded a concentrate grade of 71.5 percent with a recovery of 92 percent.

PRELIMINARY FEASIBILITY STUDY ON ECONOMICS[3] OF PRODUCING PRE-REDUCED IRON PELLETS

An economic study was prepared by R. Glanville in early May, 1976 after consultation with many experts in the fields of mining and production of pre-reduced pellets. Results from A. Neil were not available at the time of the study; consequently, a 65 percent iron concentrate grade was assumed rather than the presently indicated 71 percent.

Assuming annual production of 1,300,000 short tons of pre-reduced pellets via the Midrex process, the total capital cost of the integrated operation (including mine, mill, oxide pellet plant, and Mixrex plant) is $200,000,000. The rate of return on this investment, with 50 percent debt and 50 percent equity financing, was calculated to be 27 percent after taxes.

2 Ref. Appendix B - An Investigation of the Recovery of Iron from samples submitted by H.E. Neal and Associated Ltd. by Lakefield Research of Canada, May 31, 1976.

3 Ref. Appendix C - Preliminary Feasibility Study - Economics of Producing Pre-reduced Iron Pellets via the Midrex Process.

GEOLOGICAL-GEOPHYSICAL INVESTIGATION[4]

As a result of the findings and recommendations made by Sharp, Neal and Glanville with respect to the geological, metallurgical and economic potential of the FALCON iron deposits, further geologic mapping and magnetometer profiling was carried out by Welcome North Mines.

SUMMARY AND CONCLUSIONS

Geological, geophysical, preliminary metallurgical and economic studies indicate that modest reserves, of up to 100 million tons of 30 to 40 percent total Fe could exist on the FALCON mineral claims. The proximity of the property to existing rail, power and established communities eases the logistics of future mining operations, preliminary economic studies suggest that a viable iron ore production facility could be established in the area.

Respectfully submitted,

John S. Brock, B.Sc.
Geophysicist

April 1, 1977.

[4] Ref. Geological and Geophysical Investigation of the FALCON Mineral Claims by John S. Brock, April 1, 1977.

SUMMARY OF COSTS

FALCON MINERAL CLAIMS

Assays and Geochemical Analysis		$ 14.50
Consulting Fees		
W. Sharp	$1,586.94	
Montgomery Consultants	35.00	
H.E. Neal	1,216.65	
Ventures West	1,000.00	3,838.59
District Expenses - expediting		82.70
Field Equipment and Supplies, Drafting		41.92
Rotary Wing - Alpine Helicopters		
April 7, 2 hr.	$ 680.88	
July 20, 21, 2.2 hr.	748.96	
Sept. 5	136.27	1,566.11
Salaries and Wages		
Geology	$1,419.41	
Drafting	40.00	1,459.41
Freight and Transportation		690.29
		$7,693.52

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AFFIDAVIT SUPPORTING SUMMARY OF COSTS

I, John S. Brock geophysicist, Welcome North Mines Ltd. (N.P.L.) do hereby state that, to the best of my knowledge and belief, the statement of costs presented in this report (Geological, Geophysical and Preliminary Metallurgical Report on the FALCON Claim Group) is both correct and true.

John S. Brock

April 26, 1977

SWORN BEFORE ME at the City of Vancouver, in the Province of British Columbia, this 26 day of April, 1977

A Notary Public in and for the Province of British Columbia.

PERSONNEL

		1976 Days Worked
John S. Brock	Geologist 3029 Proctor Avenue West Vancouver, B.C.	April 30 July 20, 21 September 3, 4, 5 November 8

All other work performed by consultants on a contractual basis.

CERTIFICATE

I, John S. Brock, of 3029 Proctor Avenue, West Vancouver, British Columbia, DO HEREBY CERTIFY:

1) That I am a geologist and geophysicist with a business office at 1027 - 470 Granville Street, Vancouver, B.C.

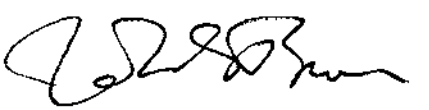
2) That I am a graduate in geology and geophysics of the University of British Columbia (B.Sc. - 1964).

3) That I am a Fellow of the Geological Association of Canada (1967), a member of the Canadian Institute of Mining and Metallurgy (1966), and a member of the Society of Exploration Geophysicists (1968).

4) That I have practiced my profession as a geologist and geophysicist for the past thirteen years.

5) That the information, opinions, and recommendations in the attached report are based on personal knowledge of the FALCON property gained from work in the field in the period July 20, 1976 to September 5, 1976.

6) That I hold an interest in the shares of Welcome North Mines Ltd. (N.P.L.), and that I am employed by Welcome North Mines Ltd. (N.P.L.) as an officer and director.



John S. Brock

DATED at Vancouver, British Columbia this 1st day of April, 1977.

Appendix A

PRELIMINARY EXAMINATION OF THE FALCON IRON PROPERTY

(BY W.M. SHARP, M.A.Sc., P.ENG., CONSULTING ENGINEER)

RES. 987-9520

WILLIAM M. SHARP, M.A.Sc., P.ENG.
CONSULTING GEOLOGICAL ENGINEER
1680 LLOYD AVENUE
NORTH VANCOUVER, B.C. V7M 1A6

April 26, 1976

Welcome North Mines Ltd.
Suite 1027 - 470 Granville Street
Vancouver, British Columbia

Attention: Mr. John S. Brock, Pres.

Gentlemen:

With this the writer respectfully transmits his report, "Preliminary Examination of the Falcon Iron Property, Omineca Mining Division, B.C.".

The scope of the field examination was substantially restricted by the snow cover and surface access conditions prevailing at the time - particularly over steep slopes and corniced ridge - crests. With only a minimal amount of bedrock exposed or accessible for direct examination, the writer decided to place most emphasis on obtaining as much indirect evidence as possible concerning the width, tenor and strike extent of the mineralization - via more-or-less detailed magnetometer surveys.

Yours truly,

W. M. Sharp, P. Eng.

WMS/sjb

WELCOME NORTH MINES LTD. (N.P.L.)

REPORT

PRELIMINARY EXAMINATION

of the

FALCON IRON PROPERTY

PINE PASS PROJECT

(55°42'N, 123°-20'W; N.T.S. 930/11W)

OMINECA MINING DIVISION, B.C.

by

W.M. Sharp, P. Eng., North Vancouver, B.C.

April 26, 1976

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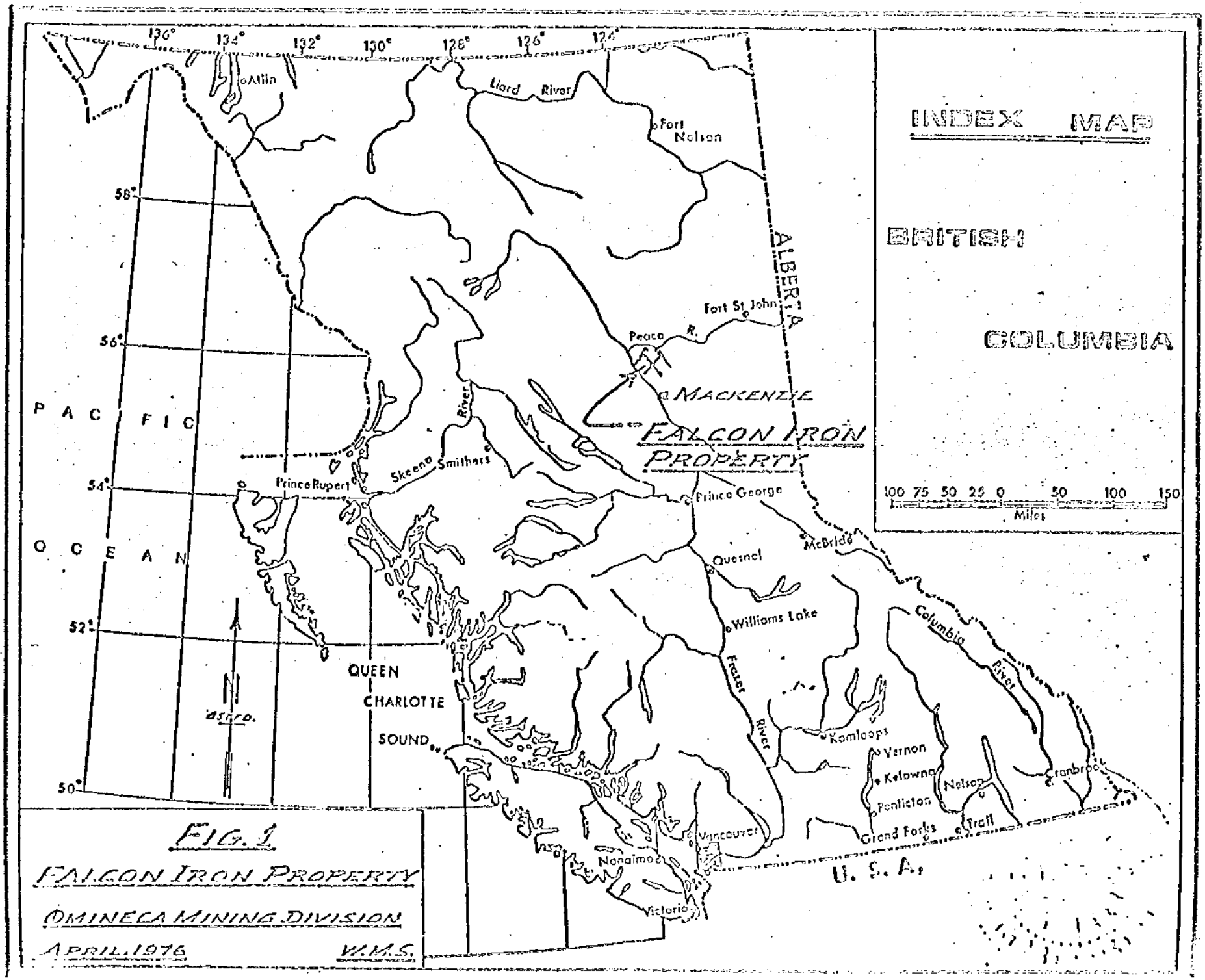


FIG. 1

FALCON IRON PROPERTY

OMINECA MINING DIVISION

APRIL 1976 W.M.S.

6780

SUMMARY AND CONCLUSIONS

The Falcon Iron Property situates 25 miles north of Mackenzie, B.C., and between elevations of 3500 - 6000 feet. Current access is by helicopter. The deposit was discovered by Mr. Al Potter in 1975 and staked by him during April, 1976. The property comprises two adjoining claims of 20 and 16 'units' each.

Strata-bound chert-magnetite/hematite mineralization occurs within Late Precambrian argillites, greywackes, and related rocks. The formational unit hosting the deposit has a N.W. - S.E. extent of 30 miles within the Mackenzie Area, and is closely similar to, and of the same age as that containing the 2-billion ton Crest chert-hematite (taconite) deposit within the northern Yukon.

The local iron mineralization comprises fine-grained, mixed magnetite and hematite in a panel of soft-sheared to hard cherty-altered sediments. Widely-separate, strike-related exposures indicate that the mineralization possesses regional continuity; it has a probable strike-length of at least 2 1/2 miles within the property itself.

The recent examination, made under winter weather conditions and with only very local exposures of bedrock, principally consisted of a magnetometer survey of a 1 mile-long northwesterly interval of the zone. The magnetometer data, plus substantiating evidence from outcrops, indicated two approximately parallel but sinuous bands of mineralization spaced from 200 - 600 feet apart. Both bands, ranging from 100 - 300 feet in horizontal width, were traced over a strike-length of about 3900 feet. Both strike northwesterly with the general formational trend and dip moderately to steeply southwest. Alternative interpretation of the data suggest that the paired bands represent either two distinct zones or a single zone which is repeated within the near-parallel limbs of a truncated fold.

Currently, there are insufficient data of the type required for a formal ore reserve estimate; however, preliminary estimates of the

tonnage potential within the currently mapped and surveyed interval result in the inference of 9.1 million long tons per 100 vertical-feet or, alternatively, 1.63 million long tons per 100 vertical-foot and 1000 feet of strike-length. To date, no systematic sampling for average grade determination has been attempted. Two "character samples" taken by the writer returned assays of 31.7% and 30.4% Fe, respectively. Previous selective sampling by others yielded assays of 57% - 63% iron. However, on the basis of the property's tonnage potential alone the writer considers that the following recommendations should be carried out - although not necessarily in the exact order shown.

RECOMMENDED EXPLORATION

STAGE I

(a) Order a contoured (air photo) mosaic as a base map for follow-up field exploration and office compilations.

(b) Establish new survey base-lines in north ridge area for cross-sect. lines at 1/8-mile (approx. 200 m.) strike-intervals, and run ground or air magnetometer profiles.

(c) Extend ground geological/magnetometer survey down ridge nose S.E. of existing sta 10 - 0, including cross-sectional or contour traverses.

(d) Carry out systematic sampling on selected cross-sections.

(e) Carry out an airborne magnetometer reconnaissance survey of the local 'iron formation'.

STAGE II

Open - contingent on Stage I results.

ESTIMATED COSTS

STAGE I

(a)	Estimate 4 sq. mi. @ $200/sq. mi. @ 1:5000 or 1" = 400'		$ 800
	Provision for copying or enlargements		50
(b)-(d) incl.,	Estimate 10 days, 3 man-crew		
	Crew mob.-demob. expense	$ 350	
	Helicopter, rental + fuel, 10 hrs.	3500	
	Geologist, (fee or salary) + field expense	1500	
	Survey Asst. wages + field expenses	750	
	Sampler, wages + field expenses	750	
	Provision for drill, steel, and tool rentals and explosives	300	
	Provision for assay charges, 25 @ $30	750	7900
(e)	Estimate 50 line-mi. @ $60/mi. + mobilization costs		3500
(f)	Provision for omissions + contingencies		1500
	Total, Stage I		$13,750

STAGE II - Open'—contingent on Stage I results.

Respectfully submitted

W. M. Sharp

W. M. Sharp, P. Eng.

INTRODUCTION

The writer travelled to Mackenzie, B.C. on April 2, 1976. Field work, based on daily helicopter transport to and from the property was carried out during April 3, 4, 6, and 7. On April 5, during which the helicopter was 'grounded' due to adverse flying conditions, the writer spent the day computing and plotting field work accomplished, compiling other property data, and planning follow-up field work. The writer returned to North Vancouver on April 8.

Arrangements pertaining to lodging, helicopter transport, and local assistance were very ably handled by Mr. Al Potter. Excellent co-operation and assistance on the actual field work were provided by Mr. Gary Saal; concurrently. Messrs. Potter and Brian Boychuk staked such claims as were required to cover the known iron showings in the Patsuk - Kimta Creek locality.

PROPERTY

(a) Location and Access

The property situates within the Misinchinka Ranges at 55°42'N, 123°-20'W, or at approximately 25 miles N.N.W. of Mackenzie, B.C. The claim blocks straddle a section of the range traversing the headwaters areas of Patsuk and Kimta Creek. Over the claim block, elevations range between 3500 and 6000 feet above sea-level.

In respect to its regional geological setting, the property lies just within the "East Marginal Tectonic Belt' of the Canadian Cordillera.

The property is currently and most conveniently accessible by way of helicopter. Currently, Alpine Helicopters operate one Jet Ranger from their base at Mackenzie. If required, the property could be connected to the Williston Lake main haul road by constructing a road up Kimta Creek. On the basis of the topography shown on Map 930/11W and a maximum 10% grade, it would appear that only 5 to 6 miles of not particularly difficult road construction would be required to make this connection.

(b) Physical Features and Climate

The topography within the general locality ranges from moderately rugged, to rugged, to locally precipitous. However, it would appear that ground-access to most intervals of the mineralized zones should not be too difficult during the 'summer' season. Because of the snow conditions prevailing at the time of the examination it was not possible to observe actual surface characteristics of the property. However, it would appear that outcrops of the mineralization or evidence of them by way of float should be fairly plentiful, in view of the fact that these occur at, or closely above timberline.

The climate at the general elevation of the showings may be described as typically central-interior alpine. The relatively dry summer season probably extends from early June through September, with temperatures generally ranging between cool and warm. Over the remainder of the year temperatures would be expected to range from cold to extremely cold. The moderate amount of precipitation during the winter accumulates as snow, with normal depths probably reaching a maximum 8 - 10 feet at the general elevation of the showings.

CLAIMS

These comprise the adjoining 20 - unit Falcon #1 claim and 16 - unit Falcon #2 claim - all located under the Modified Grid System. These were staked by A.R.C. Potter, F.M.C. No. 143630 between 10 A.M. of April 3, 1976 and 5 P.M. of April 7, 1976. Metal tags, respectively numbered 07501 and 07502 and with required information impressed, were affixed to the requisite claim posts. The claims were recorded in Vancouver on or about April 13, 1976.

EXPLORATION FACILITIES

Mackenzie and Prince George comprise convenient sources of labour, supplies, and miscellaneous services. Transportation facilities are excellent, in that a modern highway and B.C. Railway both serve the town of Mackenzie.

HISTORY

The showings were found by A.R.C. Potter in early August, 1975 while engaged in a general base metals prospecting program in the Pine Pass area. They constitute a new discovery. In addition, the taconite-type iron occurrences apparently comprise the first of their type found in British Columbia - at least the first of their type of any real importance.

REGIONAL GEOLOGY

The Falcon iron showings situate within the Eastern Marginal Tectonic Belt of the Canadian Cordillera near its west edge, and within the westerly-flanking ranges of the Rocky Mountains. Rocks within this belt rather uniformly strike northwestward or parallel to the general Cordilleran trend. They also display regional continuity, in that series and formations of similar age and lithology extend from southeastern B.C. into and through the Yukon. Within much of the belt the rocks are predominantly fine to coarse-grained metasediments and clastic sediments with a high proportion of carbonates, and are of Upper Proterozoic to Lower and Middle Paleozoic age. To a lesser extent, strips of similar rock occur within the Omineca Belt to the west across the dividing Rocky Mountain Trench.

The style of structural deformation within the Rocky Mountain section of the East Marginal Belt is one in which the gross section of rocks have been displaced and stacked by several roughly parallel, generally low-angle, eastward-directed thrusts. Within British Columbia there is some evidence of the existence of at least three major deep-seated, probably high-angle faults cutting the gross Cordilleran Belt. These probably reflect the occurrence of persistent displacements on basement structures initiated in early Precambrian time. The middle one of these is shown cutting the general section on a line positioned some 30 miles northwest of the Falcon Iron property. The possible association of

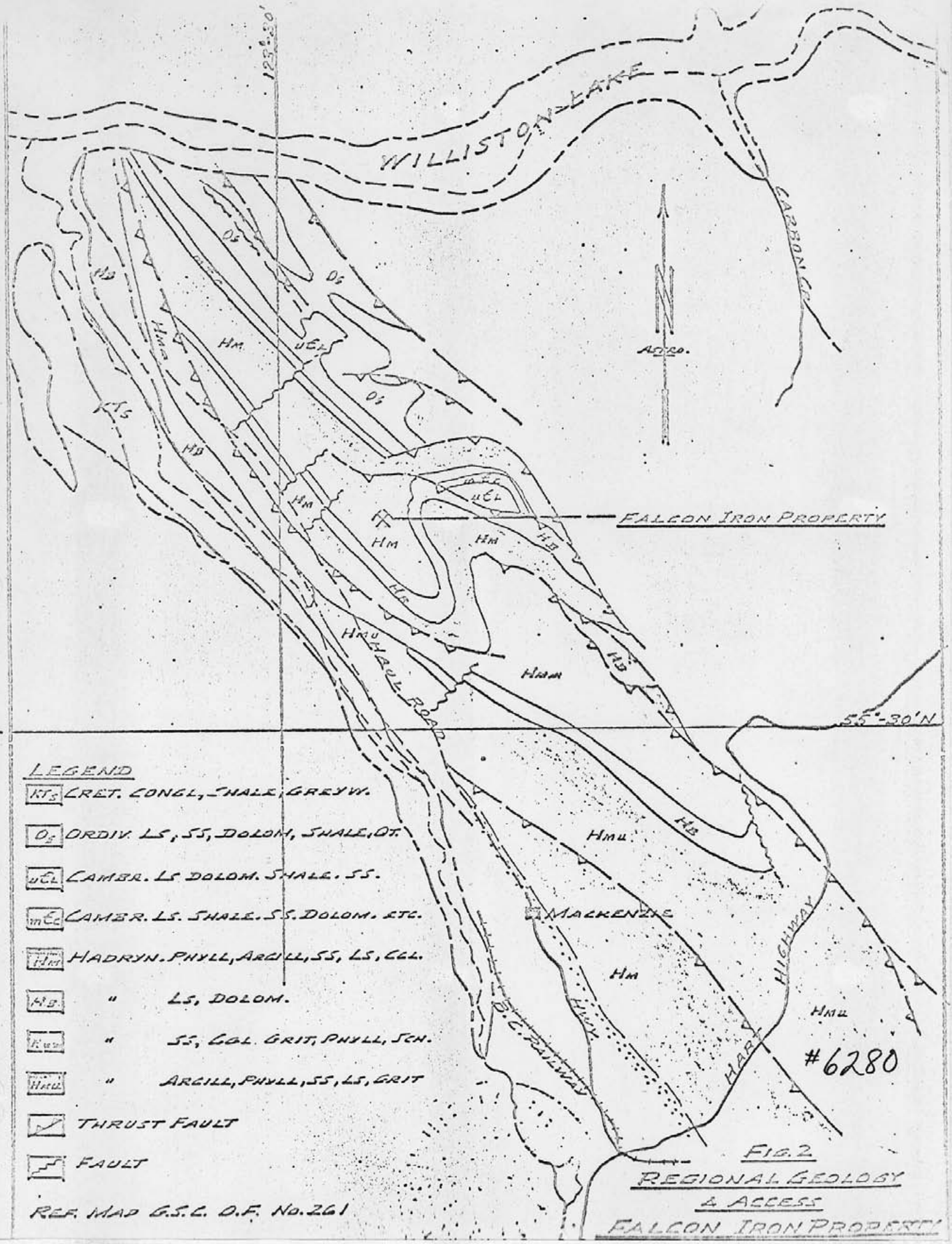


FIG. 2
REGIONAL GEOLOGY
& ACCESS
FALCON IRON PROPERTY

clusters of mineral deposits within broad belts centered on these structural features has often been mentioned in the geological literature.

At the Falcon Iron property the chert-magnetite/hematite mineralization occurs within soft schistose argillites, greywackes and related sediments which are included in a broad formational unit of Hadrynian argillite, phyllite, sandstone, limestone, and grit. The mineralization comprises a stratiform deposit - possibly of the 'Shuswap' type. The local host rocks and mineralization reflect a typical structural incompetence and appear to have been closely and frequently complexly folded. Also, the type and lithologic setting of the mineralization are, on the basis of the writer's understanding, similar to that existing at the 2-billion ton-plus Crest chert-hematite (taconite) deposit of the north Yukon section of the East Marginal Belt. The Crest deposit, however, has not yet been developed, by reason of its remote location in respect of major supply, service, and transportation facilities.

The regional strike length of the particular Precambrian formational unit hosting the Falcon Iron mineralization exceeds 30 miles. Consequently there are no apparent lateral restrictions that might influence decisions relative to prospecting and exploration on a broader, or regional scale.

PROPERTY GEOLOGY AND MINERALIZATION

(a) Lithology and Apparent Structure

Bedrock, where exposed within a few very local snow-free areas, was tentatively identified as strongly schistose black argillite and slaty-to-schistose grey to brown argillite and greywacke. Some massive, apparently-sedimentary rocks also occur within the local formation; however, most of these comprised ridge and upper-slope exposures which were inaccessible at the time of the examination.

There were no obvious bedding structures within the rock exposures examined by the writer. Cleavage and schistosity, however, are well developed - with strikes and dips, respectively, ranging between N30° - 70°W and 25° - 80°SW. The observed structures are indicative of a highly deformed assemblage of relatively incompetent rocks. Cross-sectional features of the gross formational unit are not known.

(b) Mineralization

The snow cover at the time of the examination precluded inspections of the mineralization across most of its apparent (magnetometer-indicated) width at any of the mapped exposures. What was seen consisted of mixed, hard, fine-grained magnetite, with apparently, generally subordinate hematite. This was generally substantiated by streak-tests, which ranged from dark brown to black. No other metallic minerals were observed in the material examined. Some degree of colour-banding (banded Fe oxides or interbedded oxides and waste rock) was evident on most occurrences. This feature is, reportedly, quite pronounced within some relatively lower-grade mineralization occurring in the central saddle area, where part of the material exposed consists of thin bands of magnetite/hematite and grey, white, buff, and red-brown (jaspilite) chert. This occurrence could be considered to be at least one variety of 'taconite' - the characteristic low-grade ore of the Lake Superior (and Crest) sedimentary iron formations.

Mineralization within the strike interval of the zone which was examined by the writer occurs in two parallel bands. On the basis of the interpreted magnetometer data both have apparent horizontal widths which range between 100 and 300 feet. Locally, two outcrops provide actual evidence of good grade iron mineralization across widths of at least 40 feet. Coincidentally, each band was traceable over a N.W.-S.E. length of about 3840 ft. (1170 m.). The structural and magnetometer evidence indicate that both bands dip steeply (?) to the southwest. Currently, two

possibilities exist: the first being that they comprise separate mineralized units within the section, and the second that they comprise the (truncated) upper and lower limbs of a partly over-turned, anticlinal or synclinal fold. On the west band, continuity to the northwest appears to have been at least locally interrupted by a fault, or by buckling or pinching of the mineralized band itself. Mineralization on both bands is open to the southeast. From current indications of its general trend, it would appear to extend at least an additional 8300 ft. southeasterly, with more or less local interruption or complication, to the separate exposure found by Mr. Potter in the S.E. corner of Falcon #2 claim.

The general depth continuity of the mineralization is assured by reason of its sedimentary origin or relationships. However, as it occurs within an obviously deformed panel of relatively incompetent rocks, its width and character at deeper horizons may well be affected by local structural complications - with either adverse or beneficial results. A moderate amount of additional geological and magnetometer exploration to the southeast and down-slope of sta 10-0 (Dwg. 76-1) should provide at least local information on 'cross-sectional' features of the mineralization.

(c) Sample/Assay Details

Systematic sampling was not attempted or even seriously considered during the recent examination, in view of the very limited area of bedrock exposed. Consequently, the writer took only two "character samples" of material that appeared to be geologically representative of the local mineralization. These were later submitted for analysis by Chemex Labs of North Vancouver - primarily for a determination of impurities accompanying the iron mineralization. The results are as follows:

Sample No.	% 'Equiv.Fe_3O_3'/Fe	% TiO_2/Ti	% P_2O_5/P	% S
40273	45.29/31.7	0.62/0.37	0.10/0.044	0.01
40274	43.40/30.4	0.65/0.39	0.17/0.074	under 0.01

The results should be supplemented by "Davis Tube' analyses for a determination of the percent-recoverable magnetic iron mineralization, and by microscopic examinations of specimens for a determination of the mode of occurrence of the titanium mineralization in representative material.

PRELIMINARY MAGNETOMETER SURVEY

The instrument used was a Jalander Model W505 fluxgate magnetometer. It measures the vertical component of the local magnetic field. Sta. 1 - 0 comprised a general base or reference-station but, because of transport and access restrictions, could not be generally employed as such. This did not prove to be a serious omission, as general 'background' levels (3300 - 3450 gammas) on separate traverses did not appear to vary by more than 150 gammas. Consequently, minor variations were not important in view of the degree of magnetic-contrast (4,000 - 19,000 gammas) between mineralization and barren sediments.

Individual magnetometer traverses were accomplished in two stages: Firstly, the line was surveyed, flagged, and plotted; secondly, the line was re-traversed as swiftly as possible, with magnetometer readings being taken at each line-station. On traverse #10 readings were also taken on paced-off cross-lines. Later, in the office, a 1:2000 scale topographic map was prepared and the traverses re-plotted and balanced (attempt to correct for erroneous compass bearings) on this base.

On the basis of the plotted geological and magnetic data, the writer has tentatively interpreted the two parallel N.W.-trending bands of mineralization already described and discussed in this report. However, due to the fact that the survey was done over snow, and that as a consequence of the fact that magnetometer readings were taken at heights of from 2 1/2 feet to probably over 30 feet above bedrock, the resulting gamma values are bound to contain inconsistencies which would not be present to the same

degree if the survey had been made over bare ground. Also, actual boundaries of mineralized zones are much less clearly indicated by magnetometer survey methods than they would be under bare-ground conditions. For current estimating purposes mineralized widths are interpreted as being less than the magnetometer-indicated widths - whether or not this is actually the case.

PRELIMINARY ESTIMATES - TONNAGE POTENTIAL:

For present purposes, mineralization grading 50% (magnetite and hematite) and 50% gangue minerals is inferred. On this basis the tonnage factor amounts to 9 1/3 cu. ft. per long ton. The current estimates are restricted to the magnetometer-indicated strike-intervals shown on Dwg. No. 76-1.

West Band		East Band	
Length	1170 m.=3840'	Length	1170 m.=3840'
Avg. Width	78.92 m.= 259'	Avg. Width	56.15 m.= 184'
(A) Cut-Width @ 75%	194'	(A) Cut-Width @ 80%	= 147'
Horizontal Area =	744,960 sq. ft.	Horizontal Area =	564,480 sq. ft.
Long tons per vert. ft. =	79,846	Long tons per vert. ft. =	60,502
Long tons per 100 vert.ft. =	7,984,600	Long tons per 100 vert. ft. =	6,050,200

Total, East and West Bands per 100 vert. ft. = 14,034,800 long tons

(B) Cut Width @ 50%	129.5'	(B) Cut Width @ 50%	92'
Long tons per vert. ft. =	53,299	Long tons per vert. ft. =	37,865
Long tons per 100 vert. ft. =	5,329,900	Long tons per 100 vert. ft. =	3,786,500

Total, East and West Bands per 100 vert. ft. = 9,116,400 long tons

The above figures translated into terms of tonnage potential per 1000 ft. of strike length, based on the presently-surveyed 1700 meter, or

5577 ft. strike-length amounts to approximately 1.63 million tons per 1000 ft. of strike-length and 100 ft. of depth.

SUPPLEMENTARY DATA

1. Industrial

(a) Local truck transport cost, Mackenzie area, approx. 15¢ per ton-mile

(b) Short-haul rail transport cost, Mackenzie area, 100 mi. or less, approx. 4¢-5¢ per ton-mile

(c) Long-haul rail transport cost, from Mackenzie area, 400 mi. or over, approx. 2¢-3¢ per ton-mile

(d) Industrial facilities, Mackenzie, B.C. (pop. 7500):

Finlay Forest Industries Ltd. - heavy equipment sales, service, repairs
Finlay Navigation Ltd. - towing, Williston Lake
Northern Thunderbird Air (fixed-wing aircraft)
Finning Tractor - heavy equipment sales, service
B.C. Railway (N. terminus)
Greyhound Bus Lines (parcel express)

2. Metallurgical

(e) Market price for taconite pellets,
Lake Superior Region - 47.2 - 50.45¢/l.t.u.

(f) Normal allowable (no-penalty) limits for impurities in iron ore or concentrate shipments to smelter:

Sulphur	0.1%
Phosphorous	0.1%
Titanium	0.2%
Alumina	4 %
Copper or arsenic	0.05%
Zinc, nickel, or chromium	minor %

Respectfully submitted

W. M. Sharp, P. Eng.

North Vancouver, B.C.
April 26, 1976

CERTIFICATE

I, WILLIAM SHARP, with business and residential addresses in North Vancouver, British Columbia DO HEREBY CERTIFY THAT:

1. I am a graduate of the University of British Columbia with a M.A.Sc. (1950) degree in Geological Engineering.

2. I am a registered Professional Engineer in the Province of British Columbia, Reg. No. 2164.

3. I have practiced my profession since 1950; and as a geological consultant since 1964.

4. I personally examined the showings on the Falcon Iron Property for Welcome North Mines Ltd. during April, 1976.

5. This report on the property is based on my personal examination.

6. I have no direct or indirect interest in the property or securities of Welcome North Mines Ltd., nor do I own or expect to own any securities of this Company.

W. M. Sharp. P. Eng.

North Vancouver, B.C.
April 26, 1976

WILLIAM M. SHARP, P.ENG.

H. E. NEAL & ASSOCIATES LTD.
Mineral Consultants
Geology • Mineral Dressing • Mining
124 Roxborough Drive, Toronto, Canada. Telephone 925-1584

MEMORANDUM

TO: Welcome North Mines - Ventures West Capital

FROM: H.E. Neal P.Eng.

DATE: June 1, 1976

SUBJECT: Preliminary Metallurgical Results - British Columbia Iron Samples

1. GENERAL STATEMENT

The attached report by Lakefield Research of Canada contains preliminary results of metallurgical testwork on two small shipments of iron ore specimens forwarded by Mr. John Brock of Welcome North Mines Ltd.

Sample	Weight	Crude Grade	
		% SolFe	% Magnetic Iron
1	10 pounds	42.4	32.4
2	30 pounds	56.6	52.2

The specimens consisted of a medium to fine-grind crystalline magnetite with minor hematite, limotitic stain, chlorite and quartz. Sample 2 material showed a faint banding or schistosity of magnetite crystals which appears to be a metamorphic product rather than the very fine-grained primary taconite type of sediment.

2. SUMMARY OF RESULTS

a) Magnetic concentrates with over 71% Soluble Iron were produced from the two samples. This grade of concentrate is suitable for direct reduction production of metallized pellets.

b) The specimens tested showed an above average crude iron and magnetic iron content.

c) Both samples showed excellent liberation at minus 400 mesh (37 microns) with Sample 2 showing magnetite liberation at 56% minus 400 mesh.

d) Magnetic Iron Content - By Davis Tube Test

Sample	Magnetic Concentrate			Grind
	% Wt	% SolFe	% FeRecovery	% -400 M
1	45.8	71.8	77.7	100.
2	73.1	71.4	92.2	56.2
	72.1	71.8	91.5	91.3

Sample 2 had a higher proportion of iron present as Magnetite than Sample 1 showing a 92% Fe Recovery versus 78% Fe Recovery for Sample 1 by magnetic separation.

e) Concentrate Analyses

The concentrates from Sample 2 were analysed for elements which might be undesirable for iron concentrate. The level of trace elements is within normal acceptable limits.

2. e) (continued)

Soluble Fe:	71.6%
Titania (TiO_2)	0.11%
Silica (SiO_2)	0.70%
Sulphur (S)	0.006%
Phosphorus (P_2O_5)	0.05%
P	0.011%

The semi-quantitative Spectrographic Analysis showed no harmful elements present except for Arsenic at 0.1%. This analysis is not considered to be reliable by spectrographic analysis and it is being checked by normal distillation quantitative analysis. This result will be reported as soon as it is available.

H.E. Neal P.Eng.
Consulting Engineer

Appendix B

An Investigation of

THE RECOVERY OF IRON

from samples

submitted by

N.E. NEAL AND ASSOCIATES LIMITED

Progress Report No. 1

Project No. L.R. 1927

NOTE:

This report refers to the samples as received.

The practice of this Company in issuing reports of this nature is to require the recipient not to publish the report or any part thereof without the written consent of Lakefield Research of Canada Limited.

LAKEFIELD RESEARCH OF CANADA LIMITED
Lakefield, Ontario
May 31, 1976

INTRODUCTION

Two samples of iron ore from British Columbia, marked Welcome North, were received from Mr. H.E. Neal on April 28th, 1976 and May 6th, 1976, respectively.

It was requested that David Tube Tests should be conducted on both samples. On the first sample a reducing roast was to be followed by David Tube concentration, as well as a mineralogical examination was to be carried out.

LAKEFIELD RESEARCH OF CANADA LIMITED

A.G. Scobie, P. Eng.,
Manager

D.M. Wyslouzil, P. Eng.,
Chief Metallurgist

Investigation by: O.F.C. Cook
R.W. Deane

I N D E X

S U M M A R Y

1. Sample No. 1

The sample contained medium-grained magnetite and minor fine-grained hematite in a gangue matrix, which consisted of quartz, chlorite and mica. The head analysis of this ore was 42.4 % soluble iron and 32.4 % magnetic iron. After magnetic roasting the amounts of soluble and magnetic iron were equal.

1.1. Davis Tube Results

Sample No.	Head Assay %		Concentrate			Tailing	% Minus
	Sol. Fe	Mag. Fe	Weight %	% Sol. Fe	% Fe Rec'y	% Sol. Fe	400 mesh
As is	42.4	32.4	45.8	71.8	77.7	17.5	100
Roasted	43.7	43.6	61.9	66.2	93.7	7.1	100

Conditions:

Davis Tube : Pulverized to 100 % -400 mesh. Standard Davis Tube parameters.

Roasting : 25 % CO, 75 % CO_2 mixture
700° for 1 hour.

2. Sample No. 2

This sample was higher in iron and contained little hematite. Soluble iron was determined to be 56.6 %, whereas the magnetic iron content was 52.2 %.

2.1. Davis Tube Results

Grinding Time per 100 grams	% Minus 400 Mesh	Head Analysis		Concentrate			Tailing
		% Sol. Fe	% Mag. Fe	Weight %	% Sol. Fe	% Fe Rec'y	% Sol. Fe
8 Minutes	56.2	56.6	52.2	73.1	71.4	92.2	16.4
24 Minutes	91.3	56.6	52.2	72.1	71.8	91.5	17.3

Summary - Continued

2.2. Concentrate Analysis

Soluble Iron (Fe)	72.6 %
Titania (TiO_2)	0.11 %
Silica (SiO_2)	0.70 %
Sulphur (S)	0.006 %

A semi-quantitative spectrographic analysis is shown with the test results.

NOTE TO ACCOMPANY PAGE 3

The Soluble Iron in the Combined Concentrate of Sample 2 should be 71.6% rather than 72.6%. This typing error was noted after the report was issued and it was revised as a result of a telephone discussion with Mr. Wyslouzil of Lakefield Research Of Canada. The 71.6% Fe is confirmed by the average of the Davis Tube Concentrates from the 8 minute and 24 minute grinds.

H.E. Neal P.Eng.

June 1, 1976

SAMPLE PREPARATION

Both samples were crushed to minus 20 mesh. From Sample No. 1 a head sample was prepared and assayed for soluble iron, magnetic iron and loss on ignition at 1100°C. Samples were also removed for the reducing roast and the mineralogical examination.

From Lot 2 several 100 gram samples were prepared for grinding in the pebble mill.

DETAILS OF TESTS

Sample No. 1

A. Davis Tube Tests

Samples of the pulverized head and roast product were hand-mortared to all minus 400 mesh. A ten gram charge of each was passed through the Davis tube under the following conditions:

Waterflow	1 liter per minute
Tube Oscillations	100 strokes per minute
Current to Poles	2.0 amperes
Retention Time	5 minutes

The magnetic fractions were filtered, dried, weighed and assayed for soluble iron. The non-magnetic fractions were recovered but not assayed.

Davis Tube Results

Head Sample

Head			Concentrate			Tailing	
Assay % Sol. Fe	Assay % Mag. Fe (Satmagan)	Assay % Mag. Fe (Calc.)	Weight %	Assay % Sol. Fe	% Rec'y Sol. Fe	Assay % Sol. Fe	% Minus 400 Mesh
42.4	32.4	32.9	45.8	71.8	77.7	17.5	100

Roasted Product

43.7	43.6	41.0	61.9	66.2	93.7	7.1	100

Details of Tests - Continued

B. Reducing Roast Test

Test No. R-1

Purpose: To convert hematite to magnetite.

Feed: 500 grams of Lot 1 sample was stage-pulverized to minus 65 mesh.

Procedure: The ground sample was roasted for one hour at 700°C in a Vycor glass rotary tube furnace. The flow of gas was 500 ml. per minute and consisted of 25 percent CO and 75 percent CO_2.

Observations: The roast product was black in colour. Some dust loss was observed.

Results: Weight of roaster product 46.4 grams

Sample No. 2

Davis Tube Tests

100 gram charges of the Lot 2 sample at minus 20 mesh were ground in an Abbe Pebble Mill for 8 minutes and for 24 minutes. Ten gram charges of each were then passed through the Davis Tube.

8 Minute Grind

Assay % Sol. Fe	Head Assay % Mag. Fe (Satmagan)	Assay % Mag. Fe (Calc.)	Concentrate Weight %	Concentrate Assay % Sol. Fe	Concentrate % Rec'y Sol. Fe	Tailing Assay % Sol. Fe	% Minus 400 Mesh
56.6	52.2	52.2	73.1	71.4	92.2	16.4	56.2

24 Minute Grind

56.6	52.2	51.8	72.1	71.8	91.5	17.3	91.3

Details of Tests - Continued

Screen Analyses

Lot 2

Pebble Mill Grind (8 Minutes)

Mesh Size (Tyler)	% Retained		% Passing
	Individual	Cumulative	Cumulative
+ 150 mesh	1.1	1.1	98.9
200 mesh	8.0	9.1	90.9
270 mesh	14.5	23.6	76.4
400 mesh	20.2	43.8	56.2
- 400 mesh	56.2	100.0	-
Total	100.0	-	-

Pebble Mill Grind (24 Minutes)

+ 200 mesh	0.3	0.3	99.7
270 mesh	1.0	1.3	98.7
400 mesh	7.4	8.7	91.3
- 400 mesh	91.3	100.0	-
Total	100.0	-	-

Additional Analyses

Head Sample - Lot 1

Loss on Ignition

Sample treatment - heated from 500°C in increments of 200°C to 1100°C where heat maintained for one hour.

Sample gained 0.32 % by weight on ignition.

Details of Tests - Continued

Screen Analyses

Lot 2

Pebble Mill Grind (8 Minutes)

Mesh Size (Tyler)	% Retained		% Passing
	Individual	Cumulative	Cumulative
+ 150 mesh	1.1	1.1	98.9
200 mesh	8.0	9.1	90.9
270 mesh	14.5	23.6	76.4
400 mesh	20.2	43.8	56.2
- 400 mesh	56.2	100.0	-
Total	100.0	-	-

Pebble Mill Grind (24 Minutes)

+ 200 mesh	0.3	0.3	99.7
270 mesh	1.0	1.3	98.7
400 mesh	7.4	8.7	91.3
- 400 mesh	91.3	100.0	-
Total	100.0	-	-

Additional Analyses

Head Sample - Lot 1

Loss on Ignition

Sample treatment - heated from 500°C in increments of 200°C to 1100°C where heat maintained for one hour.

Sample gained 0.32 % by weight on ignition.

Appendix C

Details of Tests - Continued

Additional Analyses

Combined Davis Tube Concentrates Lot 2

The David tube concentrates from the 8 minute and 24 minute grinds were combined and assayed for:

P_2O_5	0.05 %
SiO_2	0.70 %
TiO_2	0.11 %
S	0.006 %

A portion of this concentrate was also prepared for 30 element semi-quantitative spectrographic analysis.

Details of Tests - Continued

30 Element Semi-Quantitative Spectrographic Analysis

Concentrate

Element	Lot 2	Element	Lot 2
Aluminum (Al_2O_3)	<.01 %	Manganese	<.005 %
Antimony	-	Magnesium (MgO)	<.01 %
Arsenic	.1 %	Molybdenum	<.002 %
Barium	-	Neodymium (Nd_2O_3)	-
Beryllium (BeO)	-	Nickel	.002 %
Bismuth	-	Phosphorus	-
Boron	-	Silver	-
Calcium (CaO)	<.05 %	Silicon (SiO_2)	.5 %
Cadmium	-	Sodium (Na_2O)	-
Cerium (CeO_2)	-	Strontium	-
Chromium	.01 %	Tantalum (Ta_2O_5)	-
Cobalt	.01 %	Thorium (ThO_2)	-
Columbium (Cb_2O_5)	-	Tin	-
Copper	<.002 %	Titanium	<.01 %
Gallium	-	Tungsten	-
Germanium	-	Uranium (U_3O_8)	-
Iron (Fe)	H	Vanadium	<.005 %
Lanthanum (La_2O_3)	-	Yttrium (Y_2O_3)	<.002 %
Lead	<.002 %	Zinc	<.01 %
Lithium (Li_2O)	-	Zirconium (ZrO_2)	.01 %

CODE:

H - High 10 - 100 % approx.
- - Not Detected - Elements looked for but not found
< - Less Than

A P P E N D I X

Microscopic Examination

of a "Welcome North Project" sample

submitted by

H.E. Neal and Associates Limited

INTRODUCTION

A minus 10 mesh "Welcome North Project" head sample (Sample No. 1) was received in the Mineralogical laboratory from H.E. Neal and Associates Limited on May 4, 1976.

The sample was submitted for identification of the iron-bearing minerals.

S U M M A R Y

The sample contained medium-grained magnetite plus minor fine-grained hematite in a gangue matrix, which consisted of quartz, chlorited and mica.

PREPARATION AND PROCEDURE

A portion of the sample was briquetted and polished for microscopic examination in reflected light.

RESULTS

The sample contained magnetite and minor hematite as the major iron-bearing minerals, and quartz plus chlorite and biotite as the gangue minerals. The magnetite was relatively medium-grain sized and the hematite fine-grained, as is shown in the accompanying illustrations.

Some hematite occurred as partial rims or as attachments on magnetite, but most of it was associated with gangue. This material appeared to represent a metasedimentary rock.

LAKEFIELD RESEARCH OF CANADA LIMITED
Lakefield, Ontario
May 31, 1976 , dmm, sem

PREPARATION AND PROCEDURE

A portion of the sample was briquetted and polished for microscopic examination in reflected light.

RESULTS

The sample contained magnetite and minor hematite as the major iron-bearing minerals, and quartz plus chlorite and biotite as the gangue minerals. The magnetite was relatively medium-grain sized and the hematite fine-grained, as is shown in the accompanying illustrations.

Some hematite occurred as partial rims or as attachments on magnetite, but most of it was associated with gangue. This material appeared to represent a metasedimentary rock.

LAKEFIELD RESEARCH OF CANADA LIMITED
Lakefield, Ontario
May 31, 1976 , dmm, sem

74 µm
(200 mesh)

Illustration 1

Magnetite (coarse-grained gray grains) with hematite present as fine-grained white coloured inclusions in gangue.

Magnification 250 X

74 µm
(200 mesh)

Illustration 2

As for Illustration 1. Note the hematite on the magnetite grains.

Magnification 250 X

PRELIMINARY FEASIBILITY STUDY - ECONOMICS OF PRODUCING PRE-REDUCED IRON PELLETS VIA THE MIDREX PROCESS (BY R. GLANVILLE, B.App.Sc., P.ENG., M.B.A.)

MEMORANDUM

May 6, 1976.

TO: Ventures West Capital Ltd.

FROM: Ross Glanville

RE: Magnetite Property

DIRECT REDUCTION

Since 1973, direct reduction techniques and materials have been widely acknowledged as technically feasible, economically viable, and socially desirable. The process of direct reduction is one of reducing iron oxides to iron in a solid-state process. A variety of reductants (such as coal and natural gas) may be used to produce a material which is high purity iron containing a small amount of gangue, carbon, and oxygen. This product is generally converted into steel by arc-furnace melting.

Although there are over a thousand potential methods for direct reduction, only a handful have been commercially successful in varying degrees. Of these few, perhaps only the Midrex and the SL/DR (Stelco-Lurgi Direct Reduction) are worthy of further consideration. The Midrex process uses gas as the reductant whereas the SL/DR process uses steam coal.

The major advantages of direct reduction (DR) to the coke oven blast furnace/BOF route are as follows:

(1) Unlike scrap, the metallized iron material produced by a DR process is not subject to such wide fluctuations in supply, quality, or price.

(2) The purity of the metallized product makes it possible to produce steel of the highest quality with a very low level of contaminants.

(3) Plants using the DR process can easily meet current environmental standards, as opposed to problems in the coke oven blast furnace route of air, water and noise pollution.

(4) Rapid construction time - perhaps one half of the time that is required for the conventional process.

(5) Smaller scale of economic units and expansion as desired in smaller units.

(6) Productivity of electric furnace improves with pellet addition.

(7) Pre-reduced pellets are an alternative to scrap in scrap poor areas.

MARKET FOR PRE-REDUCED PELLETS

Quantity

The market for pre-reduced pellets in Western Canada and Washington by the late 1970's might be as follows:

Ipsco, Regina	400,000 tpy
Manitoba Rolling Mills, Selkirk	75,000 "
Western Canada Steel (Calgary & Vancouver)	200,000 "
Stelco, Edmonton (now supplied by Griffith Mine)	200,000 "
Anthies, Calgary	25,000 "
Seattle area	400,000 "
TOTAL	1,300,000 tpy

Price

The average delivered price we might expect to receive would be between $100 and $110/short ton delivered.

Although there is a demand for pellets in many other locations throughout the world, our market is probably limited to an area to which material can be delivered at transportation costs of less than $25/SDT.

COSTS

The following approximate costs are based on those of the Midrex Process:

Capital Costs

Midrex plant	$ 85/ST of pre-reduced pellets
Mine/mill/pelletizer	55/ST " " "
TOTAL	$140/ST " annual capacity

Assume production level of 1,300,000 tpy

therefore capital cost = $182,000,000

Allowing for interest during two year construction period raises this cost to about $200,000,000.

Operating Costs

(a) Mine/mill — assume strip ratio = 3:1
" ore grade = 45% Fe
" recovery = 85%
" pellet feed grade = 65% Fe

mill throughput = $1{,}300{,}000 \times \frac{100}{65} \times \frac{65}{45} \times \frac{1}{0.85} = 3{,}400{,}000$ tpy

mill cost at \$2/ton milled \$6,800,000

Amount mined at 3:1 strip ratio = 4 x 3,400,000 = 13,600,000 tpy

mine cost at 60¢/ton \$8,160,000/year

Total mine mill costs \$14,960,000

Cost of mine/mill per ton of pre-reduced pellets is:

\$14,960,000/1,300,000 = \$11.50

(b) Oxide pelletizing operating cost is approximately \$5.00/Short Ton of pre-reduced pellets

(c) Midrex process

Natural gas (11,000,000 BTU) at \$2.00/MCF	\$ 22.00
Electricity 125 KWH/ST x 1.2 cents	1.50
Manpower (230 men at \$20,000/year)	3.50
Other (material, insurance, supplies, maintenance)	3.50
Total conversion cost	\$ 30.50

Summary of operating costs:

Total conversion costs	\$ 30.50
Mine/mill operating costs	11.50
Pelletizing operating costs	5.00
Transportation (average)	20.00
Total Operating	\$ 67.00

AMORTIZATION OF CAPITAL

Assume average delivered price	\$ 105.00
Total operating costs	67.00
Revenue per ton	\$ 38.00

Revenue/year = \$38.00 x 1,300,000 tpy = \$49,400,000

Assumption: (a) depreciation at 20% declining balance
(b) tax rate of 45%

Appendix D

CONCLUSION

This preliminary economic analysis indicates a project rate of return of over 16 percent after taxes. With the use of $100,000,000 of debt (i.e. debt/equity ratio = 1.0) at 12% interest rate the rate of return on equity is increased to 27 percent.

The above rates of return indicate that we should attempt to delineate the magnetite ore body. Minimum tonnage for a plant capable of producing 1,300,000 tpy of pre-reduced pellets would be about 50,000,000 tons grading 45% iron. However, at production levels of 2/3 and 1/3 of the above, the required tonnage would be reduced accordingly.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Revenue Minus Operating Costs	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,40
Depreciation (20%)	40,000	32,000	25,600	20,480	16,384	13,107	10,486	8,389	6,711	5,369	4,295	3,436	2,749	2,199	1,75
Taxable Income	9,400	17,400	23,800	28,920	33,016	36,293	38,914	41,011	42,689	44,031	45,105	45,964	46,651	47,201	47,64
Tax at 45%	4,230	7,830	10,710	13,014	14,857	16,332	17,511	18,455	19,210	19,814	20,297	20,684	20,993	21,240	21,43
Cash Flow	45,170	41,570	38,690	36,386	34,543	33,068	31,889	30,945	30,190	29,586	29,103	28,716	28,407	28,160	28,0
Discount at 15%	39,278	31,433	25,439	20,804	17,174	14,296	11,988	10,116	8,582	7,312	6,255	5,367	4,617	3,980	3,4
Cumulative at 15% = $210,087,000															
Discount at 18%	38,280	29,855	23,548	18,768	15,099	12,249	10,011	8,233	6,807	5,653	4,712	3,940	3,303	2,775	2,3
Cumulative at 18% = $185,575,000															

PPR = 16½% = Project Rate of Return

50% Debt = $100,000,000
50% Equity = $100,000,000
Loan amortized over 15 years at 12% interest
Annuity payment = $14,682,347/year

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Revenue - Operating	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49,400	49
Interest Cost	12,000	11,678	11,318	10,914	10,462	9,955	9,388	8,753	8,041	7,244	6,351	5,351	4,232	2,978	1
Capital Cost Allowances	37,400	34,590	25,600	20,480	16,284	13,107	10,486	8,389	6,711	5,369	4,295	3,436	2,749	2,199	1
Interest plus CCA	49,400	46,268	36,918	31,394	26,846	23,062	19,874	17,142	14,752	12,613	10,646	8,787	6,981	5,177	3
Taxable Income	0	3,132	12,482	18,006	22,554	26,338	29,526	32,258	34,648	36,787	38,754	40,613	42,419	44,223	46
Tax at 45%	0	1,409	5,617	8,103	10,149	11,852	13,287	14,516	15,592	16,554	17,439	18,276	19,089	19,900	20
Principal payback	2,682	3,004	3,365	3,769	4,221	4,727	5,294	5,930	6,642	7,439	8,331	9,331	10,451	11,705	13
Interest Cost	12,000	11,678	11,318	10,914	10,462	9,955	9,388	8,753	8,041	7,244	6,351	5,351	4,232	2,978	1
TOTAL Deductions	14,682	16,091	20,300	22,786	24,832	26,534	27,969	29,199	30,275	31,237	32,121	32,958	33,772	34,583	35
Cash Flow	34,718	33,309	29,100	26,614	24,568	22,866	21,431	20,201	19,125	18,163	17,279	16,442	15,628	14,817	13
Discount at 15%	30,190	25,186	19,134	15,217	12,215	9,886	8,057	6,604	5,436	4,490	3,714	3,073	2,540	2,094	1

Cumulative at 15% = $149,555,000
therefore net present value = $149,555,000 - $100,000,000 = $49,555,000

Discount at 25%	27,774	21,318	14,899	10,901	8,050	5,994	4,495	3,389	2,567	1,950	1,484	1,130	859	652	

Cumulative at 25% = $105,954,000

Discount at 28%	27,123	20,330	13,876	9,915	7,150	5,199	3,807	2,803	2,074	1,538	1,143	850	631	467	

Cumulative at 28% = $97,351,000

Therefore IRR = 27%

NOTES:

(1) Basically, the production costs of making metallized product are determined by the cost of the ore in the desired form and the cost and availability of the reducing agent. As a general rule of thumb, ore plus reducing agent costs amount to between 60 and 75 percent of the total production cost of metallized ore.

(2) Pre-reduced pellets are considered to be a superior fuel to that of scrap and will probably average about $10/ST more than scrap. +\

(3) The recent upward surge in scrap prices is a result of several factors:

(a) increase in world demand for scrap

(b) increase in quality demands on arc-furnace steels

(c) inflation and wage increases in the labour intensive process of scrap collection, sorting and preparation

(4) The present trend is to take the ore to the fuel. In fact the Middle East is expected to lead in the production of pellets by 1980.

(5) The Griffith mine at Bruce Lake concentrates magnetite ore grading 23% iron. The mill throughput is about 6,000,000 tons per year and the total amount mined is about 13,000,000 tons per year.

(6) With a guaranteed supply of feed material (in the form of pre-reduced pellets) the construction of a steel mill at say Prince George and expansions in other areas of Western Canada become possible. This added steel capacity could provide high value-added products such as wire-rod, alloy-steel bar and sections, or pipe and tubing.

Since further processing in Canada is usually considered to be desirable, it might be possible that the government would encourage a project helping to achieve this objective (such as the production of pre-reduced pellets). This assistance might be in the form of a tax rate lower than the 45% assumed in the calculations.

(7) Consideration has been given to the production and export of coke, rather than metallurgical coal. Not only would this be a higher value product ($100 for coke vs. $60 for coal), but the byproducts of coke formation (hydrogen and carbon monoxide) could be used to produce energy, or else used directly to reduce oxide iron pellets. The latter usage would be ideal for us since the Midrex process uses hydrogen gas as the reductant. A constant cheap source of coke oven gas would make the installation of the proven Midrex process even more economic.

(8) There have also been discussions regarding a large coal gasification facility. Part of the output can go to generate electrical energy on-site and another part can be used for on-site manufacture of SNG (substitute natural gas, indistinguishable from natural gas), synthetic liquid hydrocarbons and fertilizers.

This can be taken one further step towards full resource exploitation. From the syngas* (a CO-hydrogen mixture produced from coal gasification, which has a much lower BTU rating than natural gas, or CH_4) hydrogen could be abstracted and recycled to the petrochemical facilities and, of course, to the Midrex plant.

* Gasification does not have to be taken all the way to SNG. Instead, the process can be cut off after primary gasification and gas cleaning. If primary gasification is carried out with air, a low BTU (130-150 BTU/cu. ft.) gas, eminently suitable for steam raising and generation of electric energy, is obtained. If carried out with oxygen instead of air, the product would be a syngas which affords a uniquely versatile feedstock for petrochemical industries and fertilizer manufacture.

In South Africa the Sasol Corporation uses coal-derived syngas for manufacture of just about all "petrochemicals" which we conventionally produce from petroleum and natural gas.

WELCOME NORTH MINES LTD. (N.P.L.)
1027-470 Granville St., Vancouver, B.C. V6C 1V5 Telephone (604) 687-1658

GEOLOGICAL AND GEOPHYSICAL INVESTIGATION

OF THE

FALCON MINERAL CLAIMS

N.T.S. 93-O/11W

PINE PASS AREA, B.C.

Latitude 55°42'N Longitude 123°23'W

OMINECA MINING DIVISION

APRIL 7 - SEPTEMBER 30, 1976

b y

John S. Brock

April 1, 1977

SUMMARY AND CONCLUSIONS

A preliminary geological and geophysical examination of the FALCON iron occurrences was carried out for a limited period of time in July and September, 1976 in order to further evaluate the extent of known iron-bearing formations. Surface prospecting, geological mapping and magnetometer profiling (ground and air) confirmed the extent of existing magnetite-hematite beds of possible volcanogenic (?) origin within Kaza Group formation. On the basis of this work a detailed grid-controlled magnetometer survey is recommended, followed up by diamond drill testing for continuity and grade to depth of known surface occurrences. Contingent on the results of diamond drilling, a program of airomagnetic surveys is recommended to further define other iron-bearing horizons along strike from the FALCON property.

LOCATION AND ACCESS

The FALCON claims are located in the Omineca Mining Division (N.R.S. 93-O/11W) at the headwaters of Patsuk Creek. The nearest supply point is the town of Mackenzie, B.C., which is located 25 miles south of the property. Mackenzie is serviced by rail and highway, and has airstrip facilities. A helicopter, available for casual charter, is based at Mackenzie. All-weather road access reaches to within 6 miles of the FALCON property, however at this time the most convenient access to the property is by helicopter from Mackenzie.

GEOLOGY

The regional and property geology has been generally described within the report by Sharp (Appendix A).

Further geological investigation of the property defined the approximate geologic limits of iron-bearing formation for a strike length of over 2000 meters and a maximum width of 300 meters (Plate 1). The

iron-bearing zone consists of magnetite-hematite mineralization that in places grades from 10% total volume to massive. The contacts of the iron zone were defined from outcrop and mineralized float locations.

The iron mineralization is hosted within a carbonate-rich chloritic phyllite horizon that has tentatively been correlated to the Kaza Group (probably Upper Hadrynian). The host unit strikes uniformly in a northwesterly direction and has been subjected to at least two phases of later tectonic deformation as observed from minor structures in outcrop. The dominant controlling structure is a tightly folded isoclinal sequence which strikes northwest, plunges southeast and whose limbs dip an average of 80° southwest.

The "upper" and "lower" iron horizons as mapped over the southeast extension of the formation have been interpreted as being the crestal zones of two en echelon isoclinal fold structures.

Detailed geological mapping was not attempted, and will not be done until a survey-controlled grid has been established on the property.

GEOPHYSICAL SURVEYS

Several magnetometer traverses were run over the FALCON iron formation by W. Sharp during the course of his geological-geophysical examination of the claims in April, 1976 (Appendix A). Profiles of selected portions of his survey are exhibited within this report:

Fig.(i)	Profile A-A[1]
Fig.(ii)	Profile B-B[1]
Fig.(iii)	Profile C-C[1]

During the period September 3 to 5, 1976 additional magnetometer traverses were run by Welcome North Mines in order to confirm the results of earlier work as well as to attempt a more specific determination of the dimensions of the iron formation.

1. Instrument Used

For the magnetometer survey, a McPhar MF-1 fluxgate magnetometer was used. The instrument is hand-held and measures the vertical magnetic component by use of an oil-dampened fluxgate which automatically levels itself in the direction of the vertical field. The magnetometer is of light weight and a direct read-out of gamma values can be obtained quickly.

2. Method of Survey

Prior to the actual magnetometer survey, readings were taken at several designated stations formerly established by Sharp (Appendix A). These stations were looped and re-read every hour as a means of controlling drift and diurnal variations. With base stations of an established value serving as a means of controlling drift and diurnal variations, a rapid and precise check was kept on magnetic variations and the entire survey was thus kept on a relative basis during day to day operation. After traverse lines were read, rechecks were made at the base stations within every hour, this method provided an internal control for detecting diurnal and drift variations. The survey was done by one operator using the same instrument.

3. Treatment of Data

Magnetic results were corrected for diurnal and drift variations by the field operator. The final gamma values were then plotted on a survey plan (Plate 2). This date was profiled to allow a more detailed interpretation of results obtained.

4. Interpretation of Results

Test magnetometer profiling over 4 lines (1, 1A, a and 3) has provided magnetic data that confirms surface geologic interpretations

as to the dimensions and structural complexity of the iron-bearing formations on the FALCON property.

Interpretation of profiles using 'type curves' and half-width formulas indicates that the 'upper horizon' has a true width varying from 50 to 100 meters and that its dip varies from vertical to 70° southwest. The 'lower horizon' is of less susceptibility contrast than the upper zone, and is accordingly lower grade in total iron content. Its width is in the order of 25 meters and its altitude is near vertical.

Airborne survey profiles were not plotted, however anomalous responses were observed at several locations to the south and along strike from the known occurrences. These areas will be followed up by ground traverses.

Respectfully submitted

John S. Brock
Geologist

April 1, 1977

WELCOME NORTH MINES LTD.

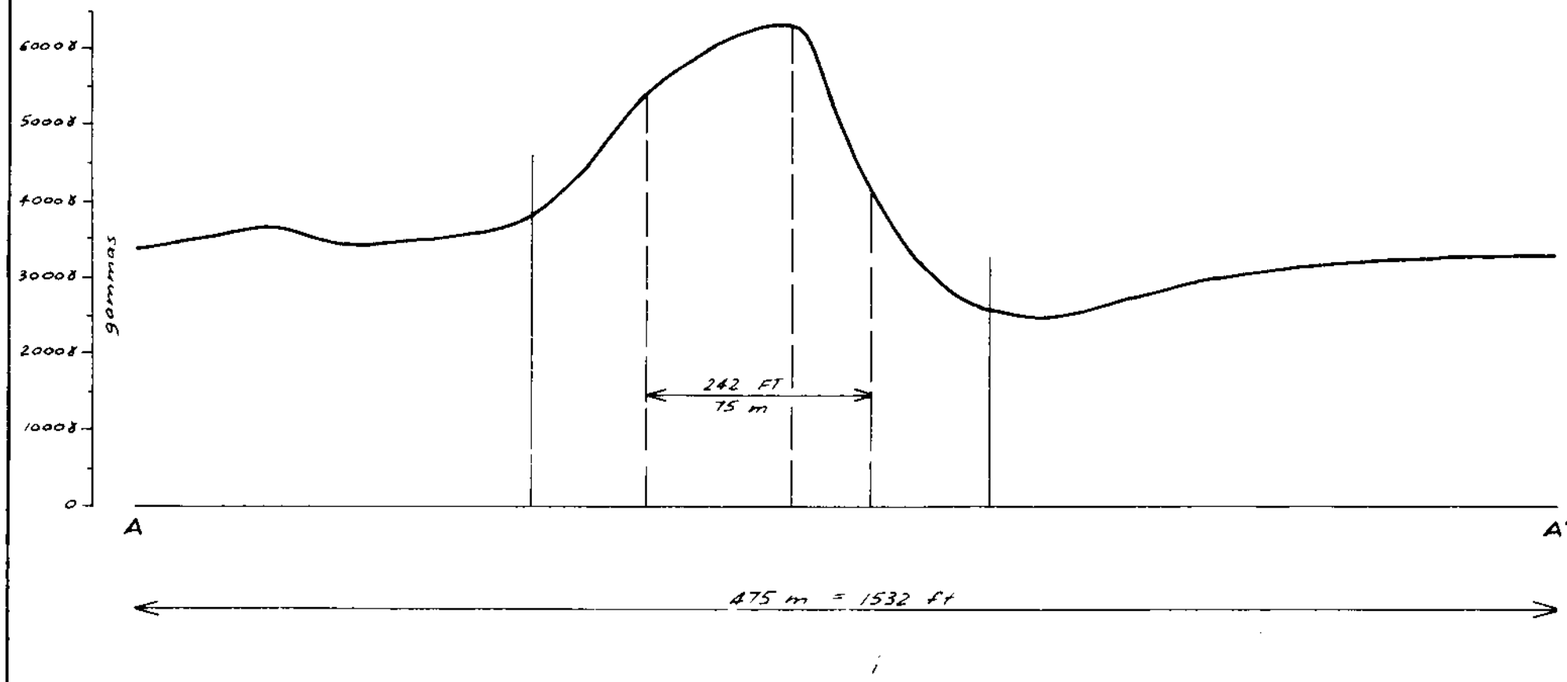
Falcon Mineral Claims

Magnetometer Survey Profile

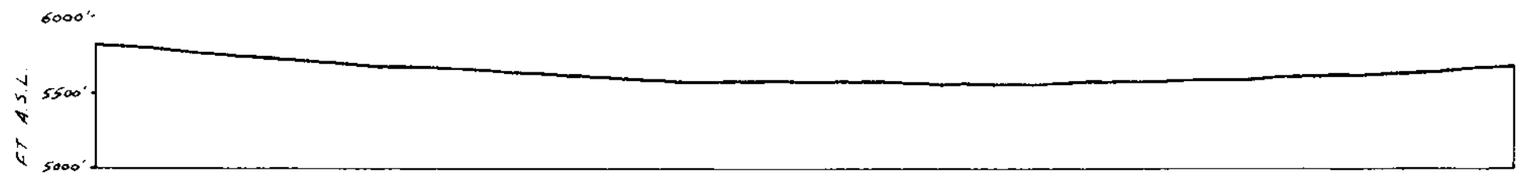
Profile A - A'

Scale *1 2000*	Date *JUNE 1976*	N.T.S *93 O 11*
Revised:	By *Sharpe*	Fig *1*

#6280



Magnetic Profile



Topographic Profile

WELCOME NORTH MINES LTD.

FALCON MINERAL CLAIMS

MAGNETOMER SURVEY PROFILE

John Brock - September, 1976

1: 2000

Line 1

#6280

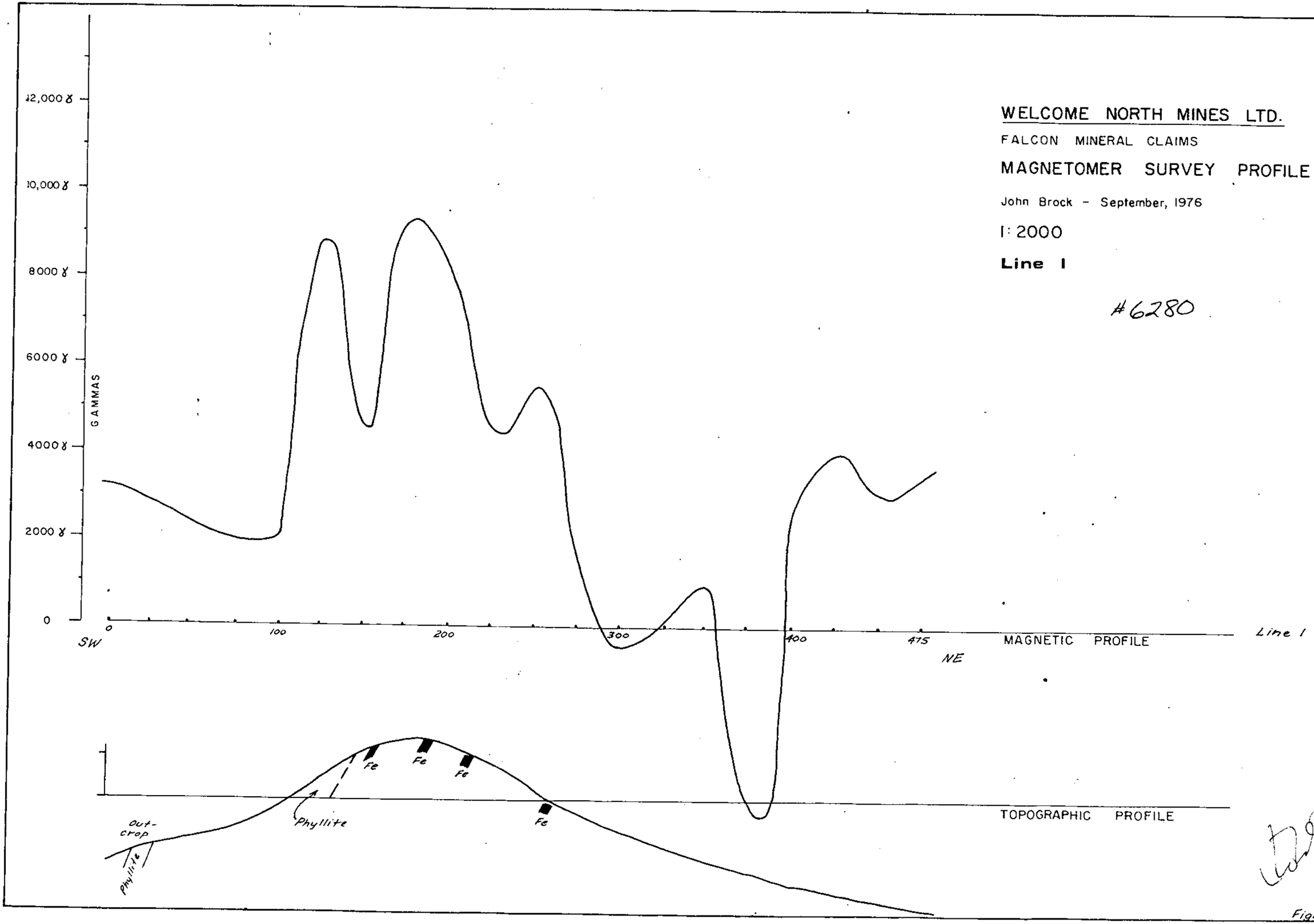


Figure 4

WELCOME NORTH MINES LTD.

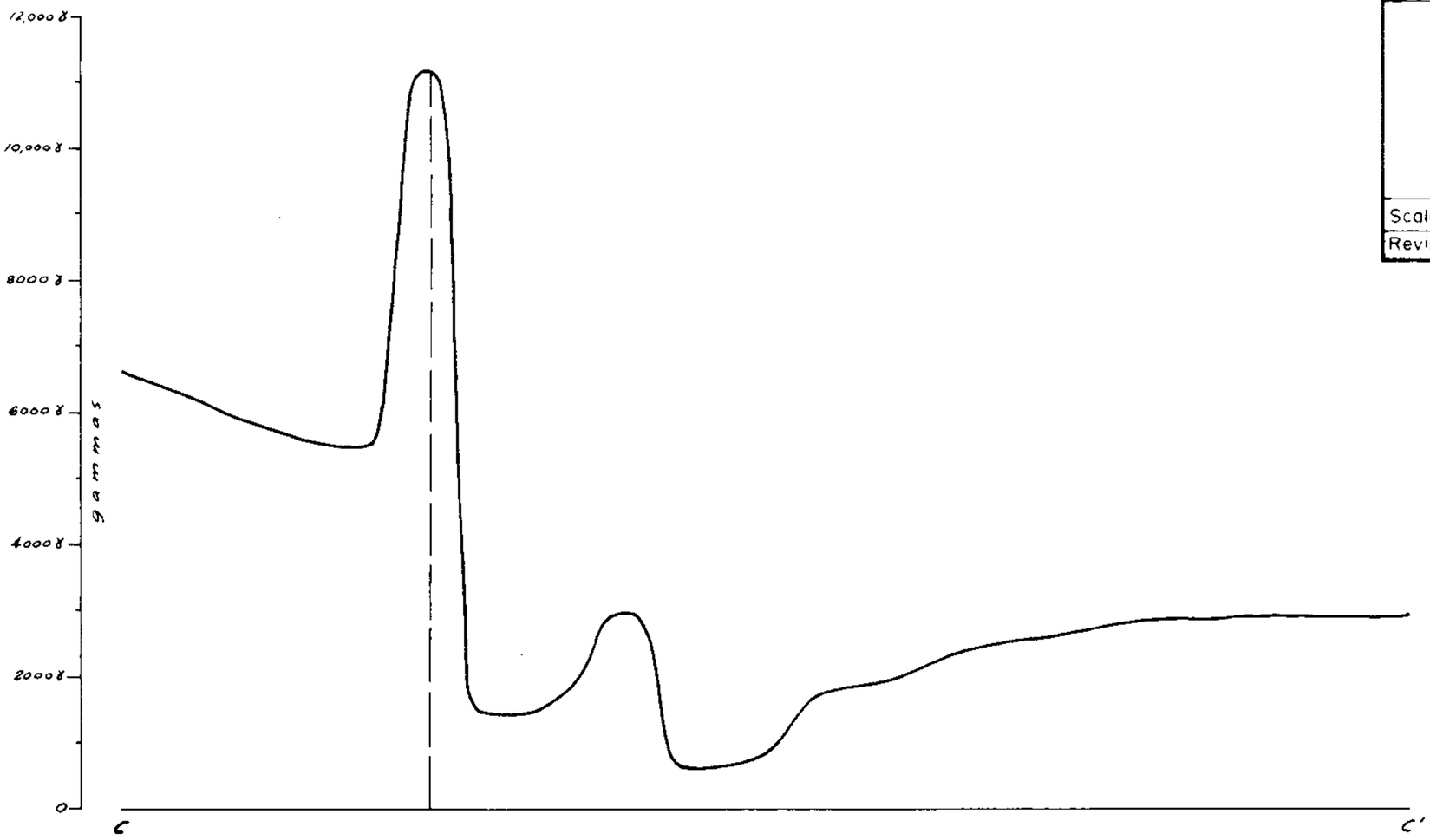
Falcon Mineral Claims

Magnetometer Survey Profile

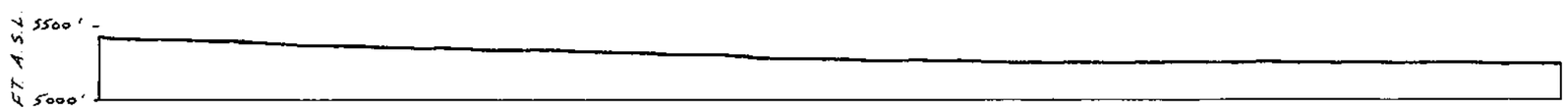
Profile C-C'

Scale 1:2000	Date JUNE 1976	N.T.S. 93 O 11
Revised	By Sharpe	Fig. 3

#6280



Magnetic Profile



Topographic Profile

WELCOME NORTH MINES LTD.

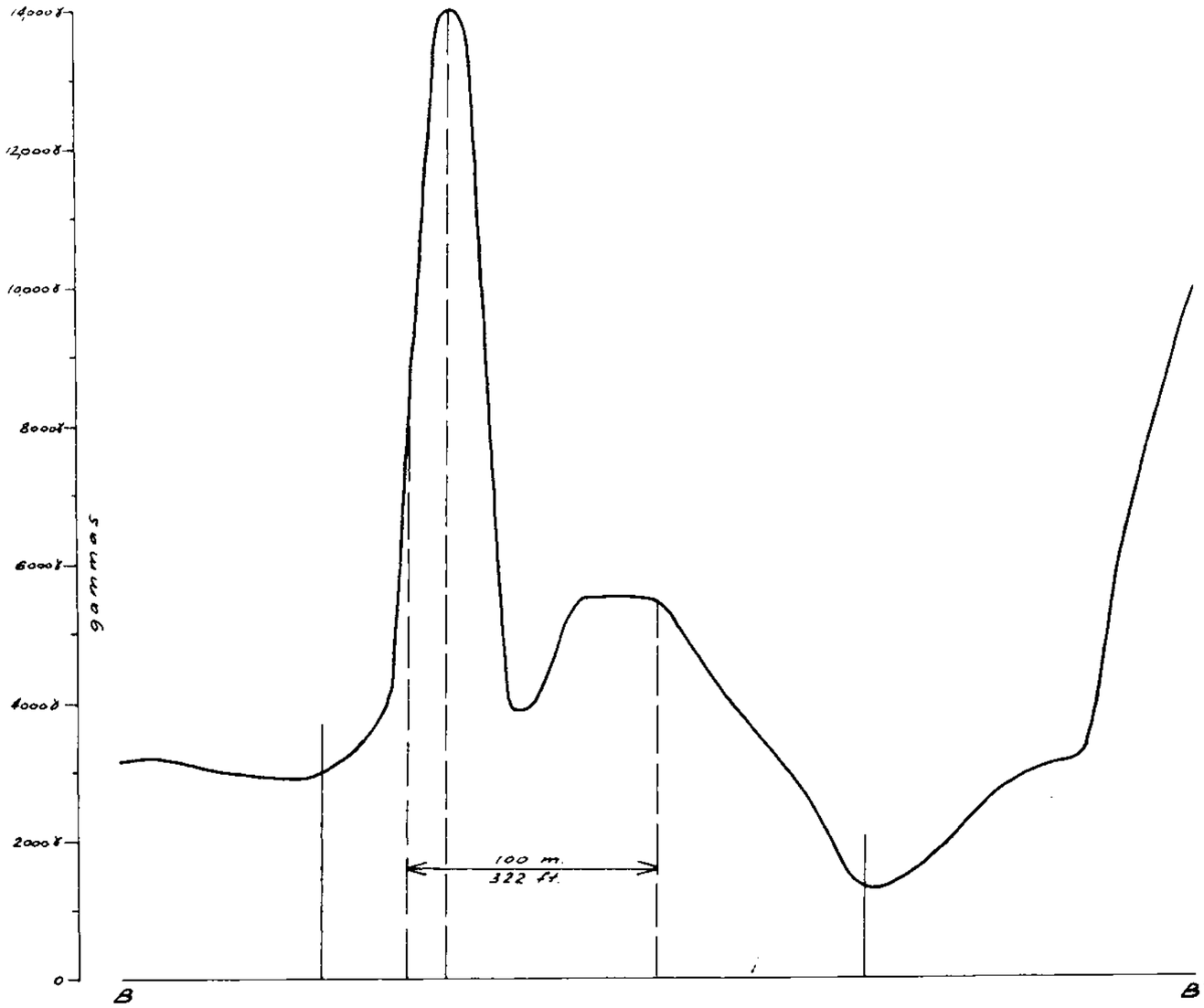
Falcon Mineral Claims

Magnetometer Survey Profile

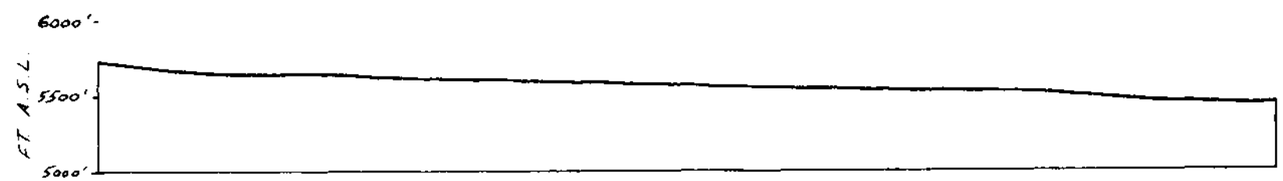
Profile B - B'

Scale 1 2000	Date JUNE 1976	N.T.S. 93 O 11
Revised	By: Sharpe	Fig. 2

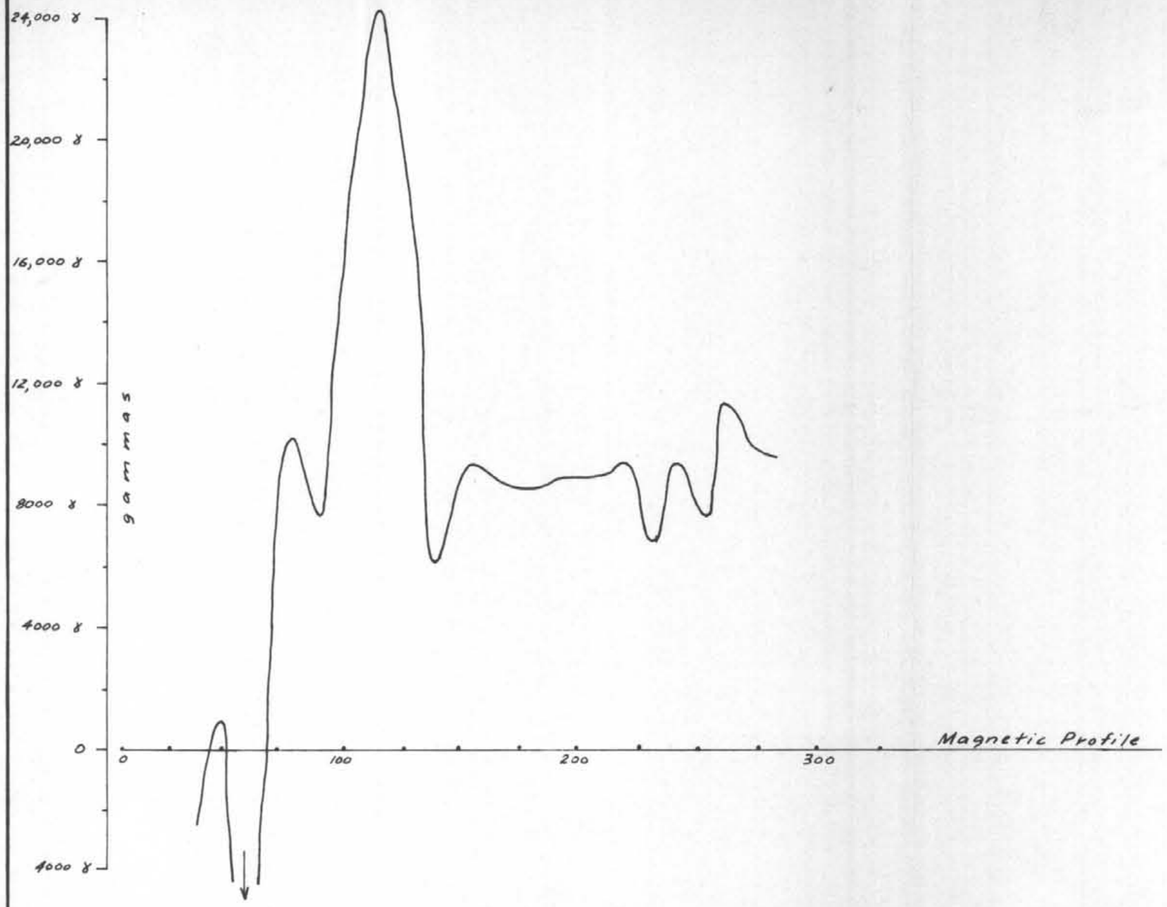
#6280

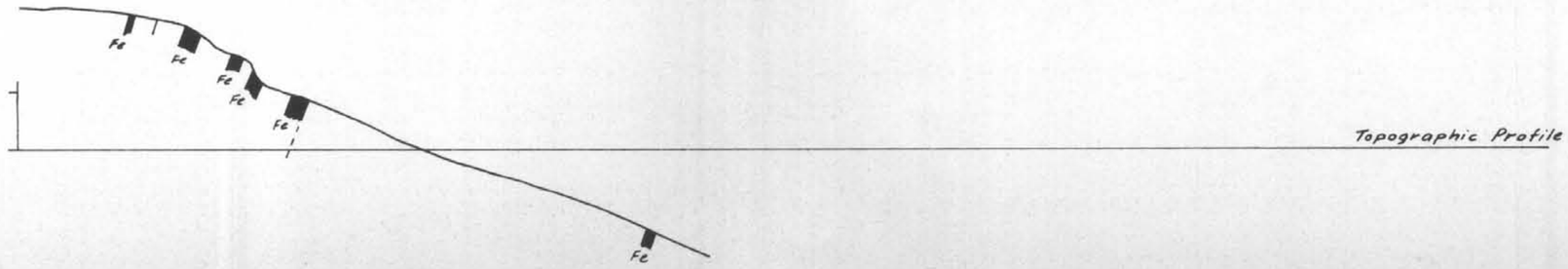


Magnetic Profile



Topographic Profile





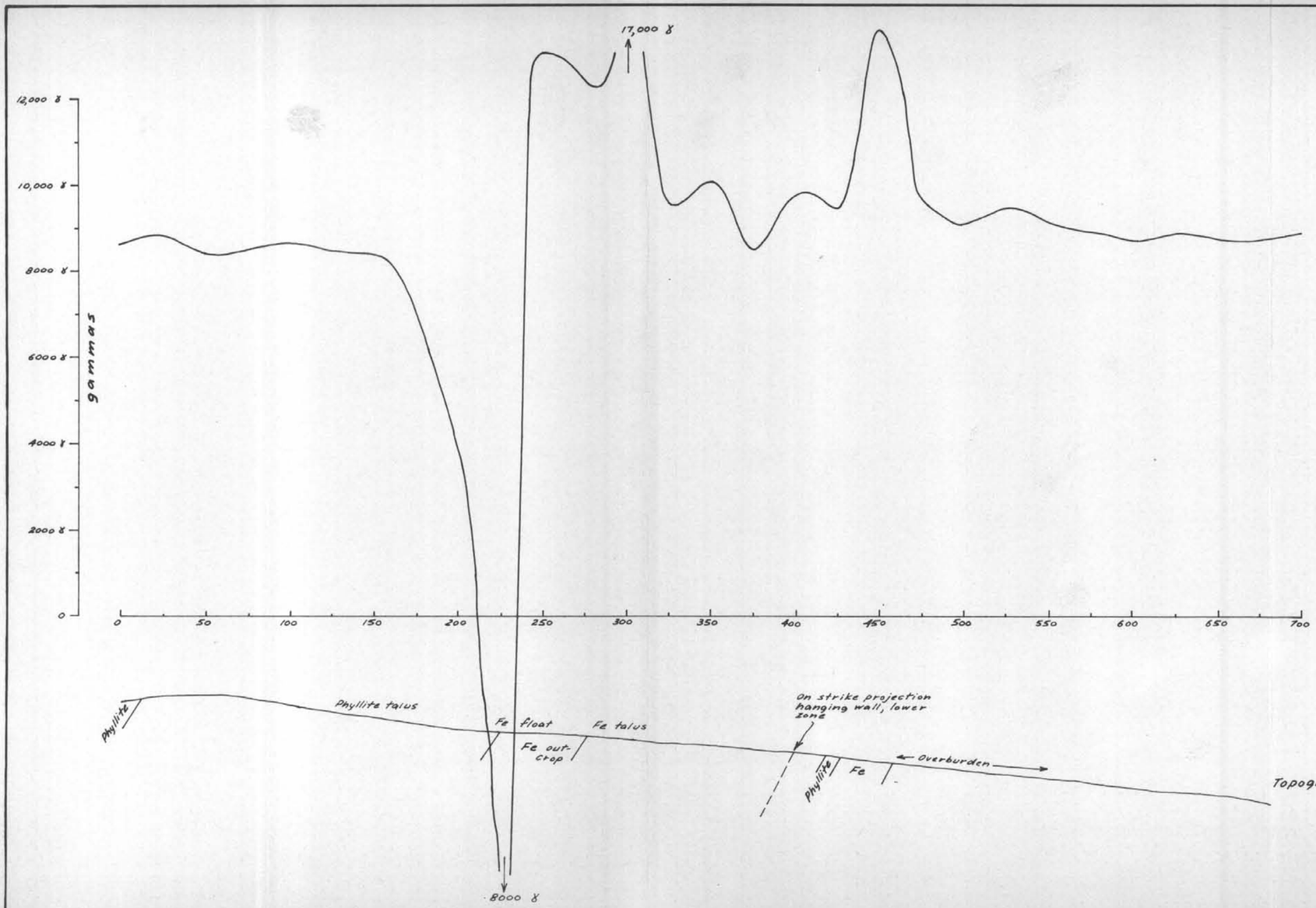
#6280

WELCOME NORTH MINES LTD.

FALCON MINERAL CLAIMS

Magnetometer Survey Profile
Line 1a

Scale: 1 : 2000	Date: Sept. 1976	N.T.S. 93-O/11
Revised:	By: V. Brock	Fig. 5



#6280

WELCOME NORTH MINES LTD.

FALCON MINERAL CLAIMS

Magnetometer Survey Profile
Line 2

Scale 1 : 2000	Date Sept. 1976	NTS 93-2/11
Revised:	By J. Bruce	Fig. 6

WELCOME NORTH MINES LTD.

FALCON MINERAL CLAIMS

MAGNETOMER SURVEY PROFILE

John Brock - September, 1976

1: 2000

Line 3

#6280

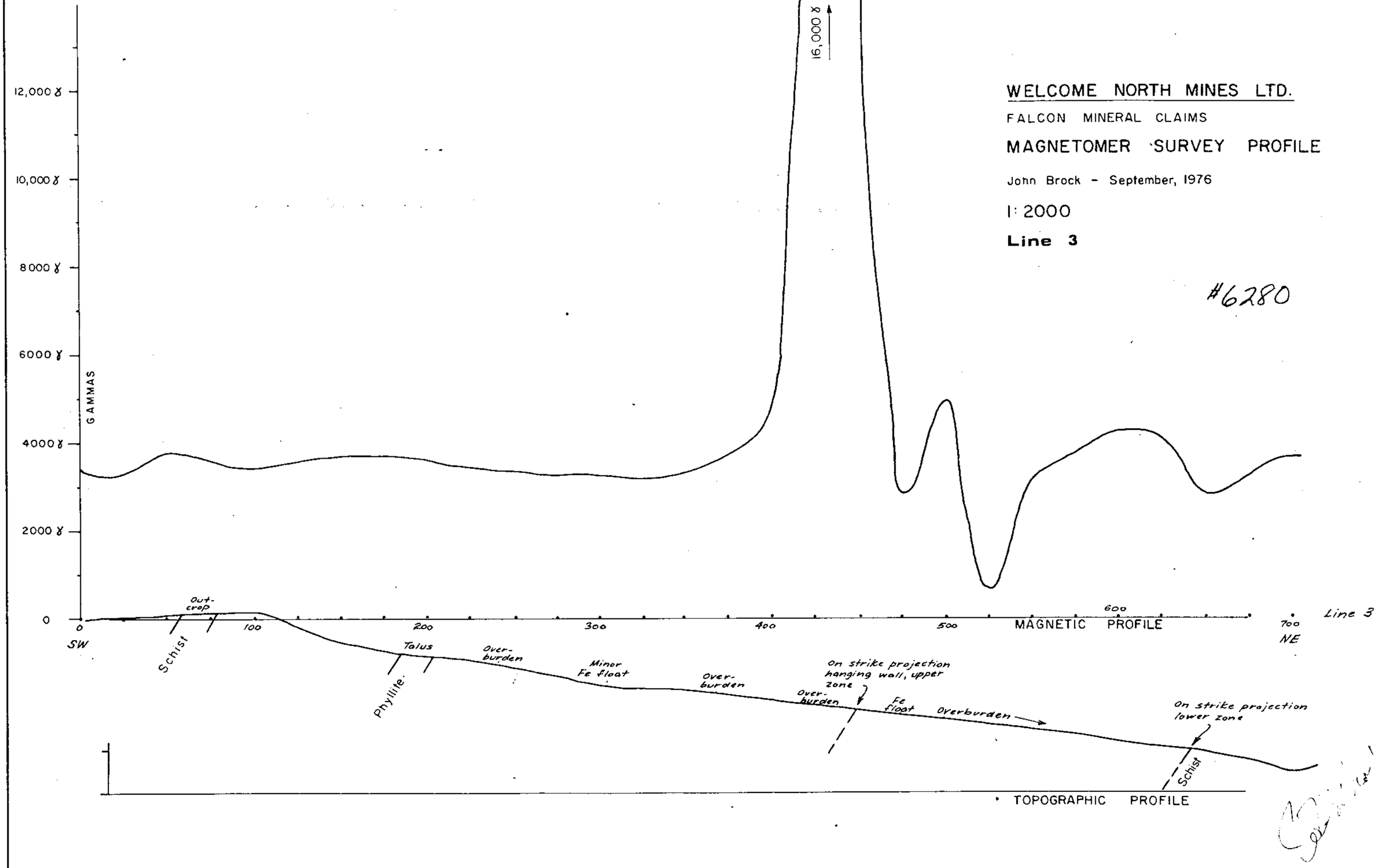


Figure 7


FALCON 3
FALCON I
AREA SURVEYED 1976
5500
5000
4500
6000
LEGEND
4-200 TRAVERSE STA. NO. - METRES
12400 MAGNETOMETER READING AT POINT IN GAMMAS
OUTLINE OF MAGNETIC ANOMALY - PRELIM. INTERPRETATION
ATTITUDE OF SCHISTOSITY (BEDDING ?)
APPROXIMATE LOCATION OF SNOW CORNICE.
EXPOSED MINERALIZATION: MAGNETITE (+ HEMATITE).
ELEVATION CONTOUR FT.
CREEK.
1" = 333'
Scale: 1:4000
6280
M-1
W. M. SHARP, P.Eng.
NORTH VANCOUVER BC
WELCOME NORTH MINES LTD.
FALCON IRON PROSPECT
PINE PASS PROJECT
OMINECA MINING DIVISION
PRELIMINARY
MAGNETIC AND GEOLOGICAL DATA
REF: MAP 93O/11W - SCALE 1:50,000
APRIL 1976

FALCON 4

FALCON I

FALCON I

FALCON 3

AREA SURVEYED 1976

Crmy wka phyllite - grits pebbles and cobbles of qtze and qtz.

Dark green phyllite - up to 4m of iron carbonate and magnetite

Crmy wka tf green phyllite Otze pebbles

Light green ankeritic phyllite with qtz. cobbles. Wka crmy to tan. A sheared calc. mudstone with qtz. cobbles pebbles and grits

13m of banded magnetite

43m massive magnetite

Several bands of magnetite

19m magnetite - banded and massive

10m massive magnetite

Tight isoclinal folding

Elev. 5550 ft.

3m magnetite

23m Low grade banded magnetite and siliceous tuffs ?

6m banded magnetite and tuff? (low grade)

15m massive magnetite

OVERBURDEN

OVERBURDEN

Numerous bands of magnetite

4m massive hematite - magnetite could be 8-10 m
8m over-burden
8m massive magnetite
4m phyllite, dk green ; little magnetite
4m phyllite, few bands of magnetite
2m massive magnetite, then dk green phyllite
28m

Lt green tuffaceous looking phyllite
Tight isoclinal

10 m massive magnetite
10 m iron carbonate silicate and magnetite bands
4m massive magnetite
4m iron carbonate
2m overburden
2m massive magnetite
6m iron carbonate - dk green phyllite
38m

Few bands of massive magnetite - hematite

Magnetite and hematite band

Bands of massive magnetite - hematite, highly folded, cut by pervasive foliation dipping E40°80° W

2m magnetite

Dark green phyllite minor magnetite and iron carbonate

Crmy - tan wea. lt green phyllite with numerous qtze pebbles to cobbles

Crmy wea phyllite

Pervasive foliation

Cornice

5200 5300 5400 5500 5600 5700 5800 5900 6000 4500 4600 4700 4800 4900 5000 5100

LEGEND

- 4-200 — Traverse sta. No - Metres
- 12400 — Magnetometer reading in gammas. Inset height : a) Base Ground 7½ b) Snow (Apr 9-1976) 30' (est?)
- Outline of Magnetic Anomaly - Prelim. Interpretation. Assumed threshold (current) - 4000 γ relative to background range of 3900 γ - 3400 γ
- Attitude of schistosity (Bedding ?)
- c — Approximate location of Snow Cornice
- Exposed Mineralization : Magnetite (+ Hematite)

(Probably) Upper Hadrynian

Magnetite - Hematite (60% + massive)

Magnetite - Hematite (20% to 60%)

Kaza Gp.

Phyllite : dark green, chloritic and siliceous. Abundant white vein quartz and iron carbonate plus disseminated and banded magnetite - hematite

Phyllite : lt green wea. cream to tan, grits to pebbles to cobbles and quartzite and quartz (conglomeritic mudstone)

Note: Geological interpretation is based on wide spaced traverses with altimeter control therefore the position of the geological boundaries and showings as shown are only approximate

Scale: 100 m = 40 m; 1 inch = 1 cm

6280 M-2

WELCOME NORTH MINES LTD.

Falcon Iron Prospect

Magnetic and Geological Data

N.T.S. 33-O/11

Scale: 1: 4000 | Date: July 31, 1976 | Plate: 1

FORM 210-0880

FALCON 3

FALCON 4

FALCON 1

FALCON 1

AREA SURVEYED 1976

FALCON 3

FALCON 1

Line 3

Line 10

100 E Line 2

475 E Line 1

A

A'

B

B'

C

C'

D

D'

LEGEND

- 4-200 — TRAVERSE STA. No- METRES
- 12400 — MAGNETOMETRE READING IN GAMMAS, INSTR. HEIGHT : a) BARE GROUND 5'±, b) SNOW (ABT 3-1/2') - 30' (MAX?)
- OUTLINE OF MAGNETIC ANOMALY - PRELIM. INTERPRETATION ASSUMED THRESHOLD (FOREGR.) 4000 ± RELATIVE TO BACKGROUND RANGE OF 3300 - 3400 ±
- ATTITUDE OF SCHISTOSITY (BEDDING ?)
- APPROXIMATE LOCATION OF SNOW CORNICE
- EXPOSED MINERALIZATION : MAGNETITE (+HEMATITE)

SCALE

100 m | 40m

1 inch | 1cm

6280 M-3

WELCOME NORTH MINES LTD.

FALCON IRON PROSPECT

MAGNETOMETER DATA

Plate 2

Scale: 1 : 4000 | Date: Sept. 10, 1976 | N.T.S. 93-O/11

DCIL - 8077 - C.