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REPORT ON THE QUESTOR AIRBORNE MAGNETOMETER SURVEY

BIG DUCK LAKE AREA

SCHREIBER AREA, NORTHWESTERN ONTARIO

NTS 42 D AND E

P. W. A. SEVERIN CORPORATION FALCONBRIDGE COPPER THUNDER BAY, ONTARIO.

FEBRUARY 1, 1983







070 Westerly Portion 158 Claims

REPORT ON THE QUESTOR AIRBORNE MAGNETOMETER SURVEY

BIG DUCK LAKE AREA

NTS .42-D and E

INTRODUCTION:

An airborne Electromagnetic and Magnetometer Survey was carried out by Questor Surveys Ltd., during July, 1982 over five (5) separate blocks of contiguous claims held by Corporation Falconbridge Copper. A technical report by S. Wong, Geophysicist for Questor Surveys Limited is included as Appendix I.

PREVIOUS WORK:

Gold, associated with quartz-carbonate veins carrying variable amounts of Cp-Sph-Py-Po-Mo and W, was first discovered in the Big Duck Lake area in 1906, fourteen years after the discovery of the Zenith sphalerite deposit which is located at Kenabic Lake situated approximately 8 km to the WSW. Sporadic work by a variety of individuals during the period 1907 - 1953 suggested that the metal values in the Big Duck Lake area have an erratic distribution and interest subsequently declined over the years.

The discovery of the Geco Cu-Zn-Ag orebody in 1954 revived interest in the Big Duck Lake area but nothing of economic significance has been discovered in the immediate area until 1982.

The Zenith dposit was developed by Zenmac Exploration during the period 1966 - 1970 and produced approximately 181,000 tons of 16.5% zinc.

The discovery of the Winston massive sulphide deposit by Corporation Falconbridge Copper in 1982 has triggered intensive staking in the region and regional exploration in the Big Duck Lake area has once again rejuvenated.

A description of the geology of the area is given in OGS Report No,27, "Mineral Deposits of the Big Duck Lake Area" by E. G. Pye that was published in 1964.

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SURVEY RESULTS:

Five separate claim blocks held by Corporation Falconbridge Copper were covered by the airborne survey and are shown on the appended maps. Claim blocks 1, 2, 4 and 5 have relatively low magnetic intensities ranging from 59570 to 59960 gammas.

Claim block 3 which covers a large area from Big Duck Lake in the east to Winston Lake in the west is underlain by rocks with a variety of magnetic intensities that vary from 59750 gammas to 61000 gammas. The relative magnetic high (60000 to 60500 gammas) located in the extreme western portion of claim block 3 appears to coincide with a narrow gabbroic sill that is shown as Unit 4 on Pye's geological map. A build-up in magnetic intensity to 61000 gammas in the northern part of the western sector of the claim block may be related in part to the quartz porphyritic unit that is shown on Pye's map as underlying Big Duck Lake.

CONCLUSIONS:

The magnetic relief of the rocks in the survey area varies from 59570 gammas to 61000 gammas. Variations appear to reflect changes in rock type with a gabbroic sill and possibly a quartz feldspar porphyry having a higher magnetic signature than the surrounding mafic volcanic rock and associated sediments.

FEBRUARY 1, 1983

P. W. A. SEVERIN THUNDER BAY, ONTARIO.

STATEMENT OF QUALIFICATIONS

- I, Paul W. A. Severin hereby certify that:
- I am an Exploration Geologist residing at 6 Hind Avenue, Winnipeg, Manitoba (temporary address 2600 Arthur Street, Thunder Bay, Ontario). I have practised my profession since graduation.
- I earned an Honours BSc Degree in Geology from Laurentian University in 1970.
- 3. I am a member of the C. I. M. M. and Fellow of the Geological Association of Canada.

FEBRUARY 1, 1983.

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PAUL W. A. SEVERIN THUNDER BAY, ONTARIO.

APPENDIX I

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AIRBORNE ELECTROMAGNETIC SURVEY CORPORATION FALCONBRIDGE COPPER BIG DUCK LAKE AREA, ONTARIO PROJECT #24038 NOVEMBER, 1982



Questor Surveys Limited, 6380 Viscount Road, Mississauga, Ontario L4V 1H3

INTRODUCTION

This report contains the airborne electromagnetic (INPUT) results and interpretation for project number 24038 which was commissioned by Corporation Falconbridge Copper. The project consists of two survey blocks, Block A and B, both situated 24 kilometres north of Schreiber in the Port Arthur Mining Division, District of Thunder Bay, Ontario. An outline map of the survey area which was taken from National Topographic Series, sheet numbers 42D and 42E is provided at the end of the appendix.

QUESTOR SURVEYS LIMITED performed the airborne survey utilizing one of the twin-engined turbine Short Skyvan SH-7 aircraft with Canadian registration C-FQSL. This aircraft has been equipped with the latest MARK VI INPUT System. In addition, nose and tail booms have been specially modified to support a large transmitter loop which encircles the aircraft. Also, a long range cabin fuel tank has been added to permit eight hours of continuous flying.

The survey was flown on July 18th and 19th, 1982, based at Terrace Bay, Ontario. A total of 1032 line kilometres were flown of which 810 kilometres is for Block A and 222 kilometres is for Block B.

The principle product of the aeromagnetic survey is the total field magnetic contour map for Block A and B. This was primarily used to aid in the interpretation and recommendations of the electromagnetic (INPUT) data.

- 1 -

The field personnel consisted of:

Pilot	-	G.	Robertson
Navigator	-	L.	Jewers
Operator	-	К.	Graham
Engineer	-	Μ.	Kohlruss
Data Technician	-	в.	Droine

SURVEY PROCEDURE

During the survey, the aircraft maintained a terrain clearance as close to 122 metres as possible, with the E.M. bird at approximately 48 metres above the ground. In areas of substantial topographic relief, the aircraft height exceeds 122 metres for safety reasons.

A normal S-pattern flight path using approximately half kilometre turns was used and a flight line spacing of 200 metres was established for Block A and Block B. These were flown in an approximate direction of N 15[°] W for Block A, and N 110[°] W for Block B, in order to optimize the electromagnetic coupling between the receiver and the conductive anomalies.

In addition to the flight lines, control lines for Block A and B were flown perpendicular to the flight lines to be used for computer levelling of the magnetic data. In addition, a ground magnetic base station was monitored daily for severe diurnal variations (magnetic storms).

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The appropriate details of each flight are logged on the flight logs by the operator-technician. The logs include the flight times, line numbers and fiducial numbers as well as a record of equipment irregularities and atmospheric conditions. One can refer to these in order to relate the flight path film to the geophysical data.

MAP COMPILATION

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The survey area is comprised of 3 photo base mosaics prepared at QUESTOR from uncontrolled mosaics which were constructed from 1974, 1:15,125 Ontario Provincial Photomaps produced by the Ministry of Natural Resources. The 3 photo base mosaics are at a scale of 1:15,840. Navigational and flight path recovery maps were produced from these mosaics.

The navigational maps were used for the direct recovery of the flight path from the 35mm strip film negatives. This film is graduated into fiducials which are used in annotating points of similar topographic features. They are accurately plotted using at least one point per major fiducial. Major fiducials are approximately 1270 metres apart.

The navigational maps cannot be employed for computer digitizing of the flight path because of shrinkage of the paper base. Therefore, Cronoflex maps with topographic detais were utilized to trace the recovery from the navigation maps and for digitizing.

- 3 -

The Cronoflex with the flight path information has been combined photographically with the appropriate survey results to yield 3 INPUT maps and 3 magnetic contour mylars for Blocks A and B at a scale of 1:15,840. White prints of these are provided in the map pockets of this report.

GENERAL GEOLOGY

Available geology shows the survey area to be underlain by metavolcanics and metasediments of Precambrian Age.

The oldest formation in this area is a belt of lower metasediments that strikes about N 20⁰ W east of Winston Lake. These lower metasediments consist mostly of fine grained to medium grained biotite-quartz-feldspar gneiss with some garnet-biotite-quartzschist and a little hornblende schist and hornblende-quartz-feldspar gneiss.

East of the lower metasediments, a belt of metavolcanics up to 5 kilometres wide extends east-west across the central part of the survey area. These metavolcanics consist of hornblende schist, pillow lava, metadiabase, volcanic breccia and tuff, and agglomerate. Along the north side of the metavolcanics is a belt of upper metasediments consisting principally of basic tuff and biotite-quartz-feldspar gneiss. These upper metasediments are similar to the lower metasediments east of Winston Lake. Garnet is found frequently where the upper metasediments are in contact with granitic rock. Magnetite which is disseminated in garnetiferous

- 4 -

gneiss can be traced at the southern part of East Shy Lake for over 2 miles. Exposures of biotite-poor gneiss with abundant pyrite are found about the north ends of Sulphur and Cable Lakes.

On the south and southwest, the belt of metavolcanics is bordered by a large sill-like basic rock unit classified as diorite, gabbro and amphibolite. This rock is principally made up of various fractions of amphibole and plagioclase feldspar with some epidote, chlorite and quartz.

The lower metasediments, the upper metasediments, and the dioritegabbro-amphibolite unit are bordered on the north, west and southeast by fined-grained to coarse-grained granitic rock.

Exposures of quartz-porphyry trending in a east-west direction, are found in the vicinity of Big Duck Lake, Little Duck Lake and Cable Lake. In a few places, where the quartz-porphyry contacts with metavolcanics, the porphyry has been intensely sheared and altered to quartz-sericite-schist.

Three sets of faulting in the area have been reported: northwest, northeast and east-northeast. However, these three fault systems appear to terminate against a strong fault extending west-northwest from the south of Big Duck Lake, through the Little Duck Lake across the entire area. In the eastern to central part of the area, the rocks strike rather uniformly east-northeast. West of Little Duck Lake, the rocks strike in a more northwesterly direction. Between Winston Lake and Coffee Lake, the rocks strike in a northnorthwest direction. It was suggested that the rocks in this area form the south flank of a major syncline.

A wide variety of mineral deposits: gold, silver, zinc, lead, copper and even molybdenum and tungsten have been reported in the Big Duck Lake area. The deposits are classifed as massive sulphide deposits, disseminated sulphide deposits and vein deposits.

Massive sulphide deposits are found only in the Zenmac Mine where sphalerite accompanied by a little pyrite, pyrrhotite and chalcopyrite occurs as irregular-shaped bodies, lenses and fracture-fillings in diorite-gabbro.

Disseminated sulphide deposits are found in sheared zones principally as pyrite and pyrrhotite with a little chalcopyrite in some cases.

The above geological description has been obtained from Ontario Department of Mines Geological Report No. 27, Mineral Deposits of the Big Duck Lake Area by P.E. Pye (1964).

INTERPRETATION

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The most common types of bedrock conductors intercepted by the INPUT airborne system are those of massive sulphides, massive magnetite and graphite. In special circumstances, they produce strong and narrow INPUT responses of moderate to high conductivity proportional to the amount of sulphides, magnetite and/or graphite present. This is not always the case, since some sulphide deposits are known to produce poorer responses which may be attributed in part by the following circumstances:

- 1. the conductor is sub horizontal;
- 2. the mineralogy does not lend itself to be detected by electromagnetic methods;
- 3. the conductor is not massive but vein-like;
- 4. there is a lack of continuity of individual veinlets;
- 5. the conductor width is small;

It should be noted that an INPUT response can also result over fault or shear zones containing conductive material. This material could be clay, saline or mineral alteration. Distinguishing these responses from genuine conductors, using only airborne data, is virtually impossible.

In areas of thin or nonconductive overburden, maximum penetration of the INPUT system is likely and the masking effect of any underlying bedrock conductor would be minimal. In this instance, weaker responses in the order of two and three channels originating from the bedrock, would be indicative. <u>NOTE:</u> Pages 8, 9 and 10 which pertain to Electromagnetic Survey data are not included herewith.

February 1, 1983

P. W. A. SEVERIN

RECOMMENDATIONS

There are many instances of conductive bodies in the survey area. According to the Ontario Mineral Potential Map, Map P. 1520 and P. 1527, Scale 1:250,000 of District of Thunder Bay and Cochrane, by Springer, J. (1978) of Ontario Geological Survey, Minerals Deposits Ser., this area is given a second rating with high mineral potential in their rating scheme. Therefore, all conductors delineated in both Block A and B have at least a medium priority. At present, it is suggested that preliminary work be carried out for Conductors 15, 16, 4 and 1 of Block A, as well as, Conductor 2 of Block B. However, the project geologist may wish to select targets on the basis of geological, geophysical and geochemical information not available to the writer.

> Respectfully submitted, QUESTOR SURVEYS LIMITED

S. Wong, Geophysicist.

APPENDIX

EQUIPMENT

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The aircraft is equipped with a Mark VI INPUT (R) airborne E.M. system and Sonotek P.M.H. 5010 Proton Magnetometer. Radar altimeters are used for vertical control. The outputs of these instruments together with fiducial timing marks are recorded by means of galvanometer type recorders using light sensitive paper. Thirty-five millimeter continuous strip cameras are used to record the actual flight path.

(I) BARRINGER/QUESTOR MARK VI INPUT (R) SYSTEM

The Induced Pulse Transient (INPUT) system is particularly well suited to the problems of overburden penetration. Currents are induced into the ground by means of a pulsed primary electromagnetic field which is generated in a transmitting loop around the aircraft. By using half sine wave current pulses and a loop of large turns-area, the high output power needed for deep penetration is achieved.

The induced current in a conductor produces a secondary electromagnetic field which is detected and measured after the termination of each primary pulse. Detection is accomplished by means of a receiving coil towed behind the aircraft on four hundred feet of cable, and the received signal is processed and recorded by equipment in the aircraft. Since the measurements are in the time domain rather than the frequency domain common to continuous wave systems, interference effects of the primary transmitted field are eliminated. The secondary field is in the form of a decaying voltage transient originating in time at the termination of the transmitted pulse. The amplitude of the transient is, of course, proportional to the amount of current induced into the conductor and, in turn, this current is proportional to the dimensions, the conductivity and the depth beneath the aircraft.

The rate of decay of the transient is inversely proportional to conductivity. By sampling the decay curve at six different time intervals, and recording the amplitude of each sample, an estimate of the relative conductivity can be obtained. By this means, it is possible to discriminate between the effects due to conductive near-surface materials such as swamps and lake bottom silts, and those due to genuine bedrock sources. The transients due to strong conductors such as sulphides exhibit long decay curves and are therefore commonly recorded on all six channels. Sheet-like surface materials, on the other hand, have short decay curves and will normally only show a response in the first two or three channels.

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(ii)

The samples, or gates, are positioned at 334, 498, 744, 1072, 1482 and 1974 micro-seconds after the cessation of the pulse. The widths of the gates are 164, 164, 328, 328, 492, and 492 micro-seconds respectively.

For homogeneous conditions, the transient decay will be exponential and the time constant of decay is equal to the time difference at two successive sampling points divided by the log ratio of the amplitudes at these points.

(II) SONOTEK P.M.H. 5010 PROTON MAGNETOMETER

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The magnetometers which measure the total magnetic field have a sensitivity of 1 gamma and a range from 20,000 gammas to 100,000 gammas.

Because of the high intensity field produced by the INPUT transmitter, the magnetometer results are recorded on a timesharing basis. The magnetometer head is energized while the transmitter is on, but the read-out is obtained during a short period when the transmitter is off. The precession frequency is being recorded and converted to gammas during the 0.2 second interval when there is no power in the transmitter loop.

For this survey, a lag factor has been applied to the data. Magnetic data recorded on the analogue records at fiducial 10.00 for example would be plotted at fiducial 9.95 on the mosaics.

DATA PRESENTATION

The symbols used to designate the anomalies are shown in the legend on each map sheet, and the anomalies on each line are lettered in alphabetical order in the direction of flight. Their locations are plotted with reference to the fiducial numbers on the analog record.

A sample record is included to indicate the method used for correcting the position of the E.M. Bird and to identify the parameters that are recorded.

All the anomaly locations, magnetic correlations, conductivity-thickness values and the amplitudes of channel number 2 are listed on the data sheets accompanying the final maps.

GENERAL INTERPRETATION

The INPUT system will respond to conductive overburden and near-surface horizontal conducting layers in addition to bedrock conductors. Differentiation is based on the rate of transient decay, magnetic correlation and the anomaly shape together with the conductor pattern and topography.

Power lines sometimes produce spurious anomalies but these can be identified by reference to the monitor channel.

(iv)

Railroad and pipeline responses are recognized by studying the film strips.

Graphite or carbonaceous material exhibits a wide range of conductivity. When long conductors without magnetic correlation are located on or parallel to known faults or photographic linears, graphite is most likely the cause.

Contact zones can often be predicted when anomaly trends coincide with the lines of maximum gradient along a flanking magnetic anomaly. It is unfortunate that graphite can also occur as relatively short conductors and produce attractive looking anomalies. With no other information than the airborne results, these must be examined on the ground.

Serpentinized peridotites often produce anomalies with a character that is fairly easy to recognize. The conductivity which is probably caused in part by magnetite, is fairly low so that the anomalies often have fairly large response on channel #1; they decay rapidly, and they have strong magnetic correlation. INPUT E.M. anomalies over massive magnetites show a relationship to the total Fe content. Below 25 - 30%, very little or no response at all is obtained, but as the percentage increases the anomalies become quite strong with a characteristic rate of decay which is usually greater than that produced by massive sulphides.

(v)

Commercial sulphide ore bodies are rare, and those that respond to airborne survey methods usually have medjum to high conductivity. Limited lateral dimensions are to be expected and many have magnetic correlation caused by magnetite or pyrrhotite. Provided that the ore bodies do not occur within formational conductive zones as mentioned above, the anomalies caused by them will usually be recognized on an E. M. map as priority targets.



24038 Block A Stacked Input[®] E.M. Profile Map of Channel 1 Amplitude Scale 1: 118668



24038 Block B Stacked Input[®] E.M. Profile Map of Channel 1 Amplitude Scale 1: 91208

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1983 09 19

Mrs. Audrey Hayes Mining Recorder Ministry of Natural Resources P.O. Box 5000 Thunder Bay, Ontario P7C 5G6

Dear Madam:

RE: Airborne (Magnetometer) Survey on mining claims TB 386761 et al in the Area of Big Duck Lake

The Airborne (Magnetometer) Survey assessment work credits as listed with my Notice of Intent dated August 24, 1983, have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours very truly,

E.F. Anderson Director Land Management Branch

Whitney Block, Room 6450 Queen's Park Toronto, Ontario M7A 1W3 Phone: (416)965-1380

R. Péchette:mc

Encl.

- cc: Corporation Falconbridge Copper P.O. Box 40 Commerce Court West Toronto, Ontario M5L 1B4
 - cc: Resident Geologist Thunder Ba**g**, Ontario



Resources

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Data

File 2.5394

Mining Recorder's Report of Work No. 20

Recorded Holder

CORPORATION FALCONBRIDGE COPPER

Township or Area

BIG DUCK LAKE AREA

Type of survey and number of Assessment days credit per claim		Mining Claims Assessed	
Geophysical	TR 296761 +0	70 inclusive	
Flectromagnetic	avs 386777 to	808 inclusive	
	519245 to	A8 inclusive	
Magnetometer 25	ava 535914 to	19 inclusive	
	557750-51		
Radiometric	eys 645756-57		
	646406 to	90 inclusive	
Induced polarization	eys 646569 to	76 inclusive	
	646591		
Other	ву з 646674		
	654629		
Section 77 (19) See "Mining Claims Assessed" colu	655274 to	79 inclusive	
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coverage of claims,	653998 to	4029 inclusive	
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Ministry of Natural Resources

Sept, 5/83

Your file: 20

Our file: 2.5394

1983 08 24

Mrs. Audrey Hayes Mining Recorder Ministry of Natural Resources P.O. Box 5000 Thunder Bay, Ontario P7C 5G6

Dear Madam:

Enclosed are two copies of a Notice of Intent with statements listing a reduced rate of assessment work credits to be allowed for a technical survey. Please forward one copy to the recorded holder of the claims and retain the other. In approximately fifteen days from the above date, a final letter of approval of these credits will be sent to you. On receipt of the approval letter, you may then change the work entries on the claim record sheets.

For further information, if required, please contact Mr. F.W. Matthews at 416/965-1380.

Yours very truly,

.F./Anderson X

Director Land Management Branch

Whitney Block, Room 6450 Queen's Park Toronto, Ontario M7A 1W3 Phone: 416/965-1316

R. Pichette:mc

Encls:

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cc: Corporation Falconbridge Copper P.O. Box 40 Commerce Court West Toronto, Ontario M5L 1B4

cc: Mr. G.H. Ferguson Mining & Lands Commissioner 845 Toronto, Ontario



Ministry of Natural Resources Notice of Intent for Technical Reports 1983 08 24 2.5394 #20

An examination of your survey report indicates that the requirements of The Ontario Mining Act have not been fully met to warrant maximum assessment work credits. This notice is merely a warning that you will not be allowed the number of assessment work days credits that you expected and also that in approximately 15 days from the above date, the mining recorder will be authorized to change the entries on his record sheets to agree with the enclosed statement. Please note that until such time as the recorder actually changes the entry on the record sheet, the status of the claim remains unchanged.

If you are of the opinion that these changes by the mining recorder will jeopardize your claims, you may during the next fifteen days apply to the Mining and Lands Commissioner for an extension of time. Abstracts should be sent with your application.

If the reduced rate of credits does not jeopardize the status of the claims then you need not seek relief from the Mining and Lands Commissioner and this Notice of Intent may be disregarded.

If your survey was submitted and assessed under the "Special Provision-Performance and Coverage" method and you are of the opinion that a re-appraisal under the "Man-days" method would result in the approval of a greater number of days credit per claim, you may, within the said fifteen day period, submit assessment work breakdowns listing the employees names, addresses and the dates and hours they worked. The new work breakdowns should be submitted direct to the Lands Management Branch, Toronto. The report will be re-assessed and a new statement of credits based on actual days worked will be issued.

Type of Survey(s)	Jaru III	mayen	чу и, ming		Township	or Area G-59	9, 606
Claim Holder(s)	IKNE MAGNETUMET	EK			BIG DU	Prospector's Licence No.	19, 01/
CORPO	RATION FALCONE	RIDGE C	OPPER			T-556	
P. 0.	BOX 40, COMME	RCE COU	RT WEST,	TORONTO,	ONTARIO	M5L 1B4	
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ULDIUK DL Name and Address of Author (o	f Geo-Technical report)	M122123	SAUGA, UN	Day Mo,	Yr. Day	Mo. Yr. 302 L11e	P7C
P.W.A. SEVERIN,	c/o CORPORATI	ON FALC	ONBRIGEE	COPPER, 26	506 VICTO	RIA AVE.E., THUNDE	ER BAY,O
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CORPORATION FALCONBRIDGE COPPER

P. O. BOX 40,

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COMMERCE COURT WEST,

TORONTO, ONTARIO. M5L 1B4

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				646435	40		64646	6 4	10		6465/5	40			
				646436	40		64646	74	10		646576	40			
				646437	40		64646	8 4	lo an		CACE 03				
				646438	40		64646	94	10	IR	646591	40			
				646439	40		64647	04	lo an		C. 4. C. C. T. 4				
				646440	40		64647	1 4	10	I R	646674	40			
				646441	40		64647	2 4	lo an	nd				-	
				646442	40	4	64647	3 4	10	1 B	654629	40			
							64647	4 4	lo an	nd 					
				646443	40		64647	5 4	10	TB	655274	40			
				646444	40		64647	64	0		655275	40			
				646445	40		64647	7 4	0		655276	40			
				646446	40		64647	8 4	0		655277	40			
				646447	40		64647	94	0		655278	40		156 01	
				646448	40		64648	04	0		655279	40 <u>TOT</u>	AL	156 CL	AIMS
				646449	40		64648	1 4	0			WES	STERL	Y PORT	IUN
				646450	40		64648	2 4	0	*	See add	itional	Page	e for	
								,			Easter]	y Portic	on Cl	aims.	

Licence T-556

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CORPORATION FALCONBRIDGE COPPER,

P. O. BOX 40,

COMMERCE COURT WEST,

TORONTO, ONTARIO M5L 1B4

Additional Claims - Airborne Magnetometer Survey - Questor Surveys Limited

anc	1	<u>DAYS</u>		DAY:	<u>S</u>		DAY:	Sand	<u>D</u> /	AYS		DAYS	
TB	643754	40 T Ɓ	643807	40	TB	645770	40	TB	646583	40 TB	646741	40	
	643755	40	643808	40		645771	40		646584	40	646742	40	
	643756	40	643809	40		645772	40		646585	40	646743	40	
	643757	40	643810	40		645773	40		646586	40	646744	40	
	643758	40	643811	40		645774	40		646587	40	646745	40 .	
	643759	40	643812	40		645775	40		646588	40	646746	40	
	643760	40 and	1 			645776	40		646589	40	646747	40	
	643761	40 ^{TB}	645728	40		645778	40 40		646590	40	646748	40	
	643762	40	645729	40		645779	40	and		and			
	643763	40 and	1			645780	40	TB	646715	40 TB	653958	40	
	643764	40 ^{TB}	645737	40		645781	40		646716	40	653959	40	
	643765	40	645738	40		645782	40		646717	40	653960	40	
	643766	40	645739	40		645783	40		646718	40	653961	40	
	643767	40	645740	40		645784	40		646719	40	653962	- 40	
	643768	40	645741	40		645785	40		646720	40	653963	40	
	643769	40	645/42	40		645786	40		646721	40	653964	40	
	643770	40	645743	40		645787	40		646722	40	653965	40	
	643771	40	645744	40	and	•			646723	40	653966	40	
an	d		645/45	40	ТВ	646505	40	and			653967	40	
TB	643779	40	645/46	40		646506	40	ΤB	646727	40	653968	40	
	643780	40	645/4/	40		646507	40		646728	40	653969	- 40	
	643781	40	645/48	40		646508	- 40		646729	40	653970	40	
	643782	40	645749	40		646509	40		646730	40	653971	40	
an	d	an	d			646510	40		646731	40	653972	40	
TB	643:784	40 ^{TB}	645761	40		646511	40		646732	40	653973	40	
	643785	40	645762	40		646512	40		646733	40	653974	40	
	643.786	40	645763	40		646513	40		646734	40	653975	40	
	643787	40	645764	40		646514	40		646735	40	653976	40	
	643788	40	645765	40		646515	40		646736	40	653977	40	
an	d		645766	40		646516	40		646737	40	653978	40	
TB	643804	40	645767	40		646517	40		646738	40	653979	40	
	643805	40	645768	40		646518	40		646739	40	1 m. 2 f	See Additiona	1
	643806	40	645769	40		646519	40		646740	40	• •	Page for	

Licence T-556

EASTERLY PORTION CLAIM LIST

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Balance Easterly Clai

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CORPORATION FALCONBRIDGE COPPER, P. O. BOX 40, COMMERCE COURT WEST, TORONTO, ONTARIO. M5L 1B4

and		DAYS	and		DAYS	"Westerly Portion"
TB	653998	40	ТВ	654037	40	Following Claims are out of
	653999	40	and			sequence, should have been on
	654000	40	, TB	654415	40	"Report of Work" sheet
	654001	40		654416	40	
	654002	40		654417	40	1D 300700 2040 DATS DA
	654003	40		654418	40	396792 20 AG
	654004	40		654419	40	386799 40
	654005	40		654420	40	386784 20 440
	654006	40		654421	40	386785 20 40
	654007	40		654422	40	386786 2010
	654008	40	and			386787 2040
	654009	40	TB	654564	40	386788 <i>.ン</i> 0 40
	654010	40		654565	40	386789 20 -40
	654011	40		654566	40	386790 20 40
	654012	40		654567	40	386791 <i>20</i> 40
	654013	40		654568	40	386792 20 40
	654014	40		654569	· 40	386793 <i>20</i> 40
	654015	40		654570	40	386794 20 40
	654016	40		654571	40	206705 24 40-

40

40 a

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⇒ 40° 386795 20 40-38679620 40 38679720 40 * mar Soday

EASTERLY PORTION

GRAND TOTAL 364 CLAIMS

40 DAYS PER CLAIM FOR AIRBORNE MAGNETOMETER SURVEY

Licence T-556

Ont	P R	inistryof atural esources	Geotechnical Report Approval			["J.,53,94
	-)				/	11/20 4/23
	Mining r	Lands Com	nments			<u></u>	
			0141				
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	To: Ge Commer	ophysics hts	Mr. Koger	Barle	www.		
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				Y			
		proved	Wish to see again with correction	35	Date	Signature	-
	To: Min	ing Lands S	Section, Room 6462, Whitney Bl	ock. (Tel: 5	i-1380)		

1933 03 02

2.5394

Mining Recorder Ministry of Natural Resources P.O. Box 5000 Thunder Bay, Ontario P7C 5G6

Dear Madam:

We have received reports and maps for an Airborne (Magnetometer) survey submitted on mining claims TB 386761 et al in the Area of Big Duck Lake.

This material will be examined and assessed and a statement of assessment work credits will be issued.

Yours very truly,

May 20/83 E.F. Ander Director - assess for Mag survey only. Land Manag - client has reached maximum Vhitney Bl client has reached maximum Queen's Pa credits for graphysical on these Toronto, Or claims MD

- - -

Phone 416/9

D. Wice:jh

cc: Corpor. P.O. Bo. Commerce Court West Toronto, Ontario M5L 1B4

> Paul W.A. Severin c/o Corp. Falconbridge Copper 2606 Victoria Avenue East Thunder Bay, Ontario P7C 1E7



CORPORATION FALCONBRIDGE COPPER

2606 Victoria Avenue East Thunder Bay, Ontario P7C 1E7 Telephone 807/623-1511

February 1st, 1983.

Mrs. A. Hayes, The Mining Recorder, Ministry of Natural Resources, 435 James Street, South, P. O. Box 5000, Thunder Bay, Ontario. P7C 5G6

RECEIVED

rts 1 1 1983

MINING LANDS SECTION

Dear Mrs. Hayes:

With reference to our airborne Magnetometer Survey Assessment Report covering our claims in the Big Duck Lake area, please note the following:

A total of 364 claims are involved and we have divided the claims into two groups. Area 070 in the westerly portion covers 158 claims and area 086 covers 206 claims in the easterly portion, thus the numerical sequence of the claim numbers are divided into two lists.

Yours truly, CORPORATION FALCONBRIDGE COPPER

Vail Sperin

P. W. A. SEVERIN
SENIOR EXPLORATION GEOLOGIST
PWAS/ce
encls. 2 Copies of Report.

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Ministry of Natural Resources

1 0.0 0

086 - Easterly Portion 206 Claims

File_

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s)AIRBOR	NE MAGNETOMETER	
Township or AreaBIG_DU	<u>CK LAKE AREA -G599,606,609,6</u>	17MINING CLAIMS TRAVERSED
Claim Holder(s) CORPORATI	ON FALCONBRIDGE COPPER	List numerically
P.O.BOX 40, COMMERCE	COURT WEST, TORONTO, ONT, M5L	1B4
Survey Company_QUESTOR_S	URVEYS LIMITED, MISSISSAUGA,O	NI. TB 386761 Portion
Author of Report P. N. A.	SEVERIN, c/o CORP.FALCONBRIDG	E_COPPER TB 386762
Address of Author 2606 VICT	ORIA AVENUE, EAST, THUNDER BAY,	ONI
Covering Dates of Survey_JUL	Y 18-19, 1982 F/C 1 (linecutting to office)	<u> </u>
Total Miles of Line Cut		386764
nifestiningen van henere statenske kolonister in en en van den sik sectieverene van uit in de sectieverene van m	verturaszacióneces - vertura sensa i ditagtanen e selectura para para desta de Dalastina anessa datante compañ	
SPECIAL PROVISIONS	DAYS	386766
CREDITS REQUESTED	Geophysical per claim	296.76.7
ENTER 40 days (includes	Electromagnetic	
line cutting) for first	Magnetometer	
survey.	Radiometric	386769
ENTER 20 days for each	–Other	386770
same grid.	Geological	
AIRBORNE CREDITS (Special	provision credits do not apply to airborne surveys	,
Magnetometer <u>. 40</u> Electror (e	nagnetic Radiometric	386779
DATTE FEBRILARY 1 1983 SI	CNATURE, PRI ANDRAS'	396,900
DATE: LENGINE_E, 1203. SIC	Author of Report or Agent	
		380601
	RE A ASIA RE	CEVED 386802
Res. Geol.		386803
File No. Type Date	claim Holder	386804
	MINING	LAN 28-Starlon
		386807
		тв 386808
		TOTAL CLAIMS <u>364</u> see atta list als

837 (5/79)

OFFICE USE ONLY

GEOPHYSICAL TECHNICAL DATA

Number of Stations		Number	of Readings	
Station interval		Line space	cing	
Profile scale				
Contour interval				
Instrument				
Accuracy – Scale co	nstant			
Diurnal correction m	ethod			
Base Station check-ir	interval (hours)			
Base Station location	and value			
				
Instrument.				
Coil configuration				
Coil separation				
Accuracy	·			
Method:	Fixed transmitter	Shoot back	🗀 In line	Parallel line
Frequency				
Parameters measured		(specity V.L.F. station)		
i arameters measureu				
Instrument				
Scale constant				
Corrections made				
Base station value an	d location			
Elevation accuracy				
Instrument	· · · · · · · · · · · · · · · · · · ·	·····		
Method [] Time D	Domain	F	requency Domain	
Parameters On tim	e	F	requency	
Off tim	ne	R	ange	
- Delay 1	ime			
- Integra	tion time			
2 Power				
⁻⁴ Electrode array				
Electrode spacing				

INDUCED POLARIZATION

SELF POTENTIAL

Instrument	Range
Survey Method	
Corrections made	

RADIOMETRIC

Instrument		
Values measured		
Energy windows (levels)		
Height of instrument	Background Count	
Size of detector		
Overburden		

(type, depth - include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey	 · · · · · · · · · · · · · · · · · · ·
Instrument	
Accuracy	
Parameters measured	
Additional information (for understanding results)	

AIRBORNE SURV	EYS	
Type of survey(s)	MAGNETIC	
Instrument(s)	SONOTEK P. M. H. 5010 PROTON J (specify for each type	AGNETOMETER
Accuracy	1 GAMMA	
·	(specify for each type	e of survey)
Aircraft used	TWIN-ENGINED TURBINE SHORT SK	(VAN SH-7_AIRCRAFT(C-FQSL)
Sensor altitude	48 METERS	
Navigation and fligh	t path recovery method	BYT UNCONTROLLED PHOTO MOSALCS
	FLIGHT PAT	1 - 35 mm FILM
Aircraft altitude	122 Metres	Line Spacing200 Metres
Miles flown over tot	alarca 1,032 Line Kilometres	Over claims only 365 Line Kilometres

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken_____

Values expressed in: per cent p. p. m. p. p. b.						
Cu, Pb, Zn, Ni, Co, Ag, Mo, As,-(circle)						
Others						
Field Analysis (tests)						
Extraction Method						
Analytical Method						
Reagents Used						
Field Laboratory Analysis						
No. (test						
Extraction Method						
Analytical Method						
Reagents Used						
Commercial Laboratory (tests)						
Name of Laboratory						
Extraction Method						
Analytical Method						
Reagents Used						
General						

	-									1 Of 3
Febr	uary 1st,	1983								
CORP	ORATION FA	LCONB	RIDGE COP	PER			Li	cence T-55	56	
Ρ. Ο). BOX 40,									
COMM	IERCE COURT	WEST	,							
TORO	ONTO, ONTA	RIO.	M5L 1B4					,		
Addi	tional Cla	ims -	Airborne	Magn	ieto	meter Su	rvey - Q	uestor Sur	rveys Lim	ited
and										
TB	519245	TB	646420		TB	646451	ТВ	646483		
	519246		646421			646452		646484		
	519247		646422			646453		646485		
	519248		646423			646454		646486		
and			646424			646455		646487		
TB	535914		646425			646456		646488		
	535915		646426			646457		646489		
	535916		646427			646458		646490		
	535917		646428			646459	and TR	616569		
	535918		646429			646460	i D	646570		
	535919		646430			646461		646571		
and			646431			646462		646572		
ΤB	557750		646432			646463		646573		
	557751		646433			646464		646574		
and			646434			646465		646575		
TB	645756		646435			646466		616576		
	645757		646436			646467	and	040370		
and			646437			646468	anu TR	646501		
TB	646406		646438			646469	and	040331		
	646407		646439			646470	anu TP	616671		
	646408		646440			646471	and	040074		
	646409		646441			646472	το	651620		
	646410		646442			646473	I D b a a d	004029		
	646411					646474	anu TD	655074		
	646412		646443			646475	IB	0002/4		
	646413		646444			646476		0002/0		
	646414		646445			646477		0002/0		
	646415		646446			646478		0002//		
	646416		646447			646479		000270		156 CLATMO
	646417		646448			646480		000279		UV DODTION
	646418		646449			646481			WESTER	LT PUKITUN
	646419		646450			646482	*	See additi	ional Pag	e for
								Easterly F	Portion C	laims.

Fe	bruary ls	t, 1	983							2 of 3
СО Р.	RPORATION 0, BOX 4	FAL 0,	CONBRIDGE	COPPE	R,		Licen	ce T-5	56	
СО ТО	MMERCE CO	URT	WEST, O M51-11	R4			EASTE	RLY PO	RTION CLA	IM LIST
Ad	ditional	Clai	ms - Airbo	orne M	agnetomet	er Sur	vey - Que	estor	Surveys L	imited
an	d					and				
TB	643754	TΒ	643807	ТВ	645770	ТB	646583	ТB	646741	
	643755		643808		645771		646584		646742	
	643756		643809		645772		646585		646743	
	643757		643810		645773		646586		646744	
	643758		643811		645774		646587		646745	
	643759		643812		645775		646588		646746	
	643760	an	d		645776		646589		646747	
	643761	TB	645728		645778		646590		646748	
	643762		645729		645779	and		and		
	643763	an	d		645780	ТВ	646715	TB	653958	
	643764	ТB	645737		645781		646716		653959	
	643765		645738		645782		646717		653960	
	643766		645739		645783		646718		653961	
	643767		645740		645784		646719		653962	
	643768		645741		645785		646720		653963	
	643769		645742		645786		646721		653964	
	643770		645743		645787		646722		653965	
	643771		645744	and			646723		653066	
an	d		645745	TB	646505	and	010720		653967	
ТB	643779		645746		646506	TB	646727		653968	
	643780		645747		646507	1.0	646728		653969	
	643781		645748		646508		646729		653970	
	643782		645749		646509		646730		653971	
an	d	an	d		646510		646731		653972	
ТB	643784	TB	645761		646511		646732		653973	
	643785		645762		646512		646733		653974	
	643786		645763		646513		646734		653075	
	643787		645764		646514		646735		653976	
	643788		645765		646515		646736		653977	
an	d		645766		646516		646737		653978	
ΤB	643804		645767		646517		646738		653979	
	643805		645768		646518		646739		د ارداد د م	Additional
	643806		645769		646519		646740		Dav	nutrina:
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Balance Easterly Claims

CORPORATION FALCONBRIDGE COPPER, P. O. BOX 40, COMMERCE COURT WEST, TORONTO, ONTARIO. M5L 1B4

and		and		
ТВ	653998	T	В	654037
	653999	and		
	654000	T	В	654415
	654001			654416
	654002			654417
	654003			654418
	654004			654419
	654005			654420
	654006			654421
	654007			654422
	654008	and		
	654009	Т	В	654564
	654010			654565
	654011			654566
	654012			654567
	654013			654568
	654014			654569
	654015			654570
	654016			654571
	654017			654572
	654018	and		
	654019	TB	,	654627
	654020			654628
	654021			
	654022			
	654023			
	654024			
	654025			
	654026			
	654027			
	654028			
	654029			

Licence T-556

TOTAL 206 CLAIMS

EASTERLY PORTION

GRAND TOTAL 364 CLAIMS

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CORPORATION FALCONBRIDGE COPPER



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2606 Victoria Avenue East Thunder Bay, Ontario P7C 1E7 Telephone 807/623-1511

February 2nd, 1983

Mrs. Audrey M. Hayes,
Mining Recorder,
Ministry of Natural Resources,
P. O. Box 5000,
435 James Street, South,
Thunder Bay, Ontario.
P7C 5G6

RE: TECHNICAL DATA REPORT - AIRBORNE MAGNETOMETER SURVEY BIG DUCK LAKE AREA G 599, 606, 609, 617

Dear Mrs. Hayes:

The following claims should have been included in our list of claims for assessment (Westerly Portion). It would be appreciated if you would add this letter to the report to account for 364 claims.

ТΒ	386780	TB	386787	ТВ	386794
	386781		386788		386795
	386782		386789		386796
	386783		386790		386797
	386784		386791		386798
	386785		386 792		386799
	386786		386793		

One claim was ommitted on the Easterly Portion claim list TB 645777 (Page 2 of 3).

Thank you for your co-operation.

Yours truly, CORPORATION FALCONBRIDGE COPPER

Vanl Spens

P. W. A. SEVERIN SENIOR EXPLORATION GEOLOGIST

UPPER AGUASABON LAKE G-617



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REFERENCES AREAS WITHDRAWN FROM DISPOSITION S.R. – SURFACE RIGHTS M.R. -- MINING RIGHTS 49°00' DATE OF ISSUE AUG - 4 **1983** Ministry of Natural Resources TORONTO NOTES 400' SURFACE RIGHTS RESERVATION AROUND ALL LAKES & RIVERS. FLOODING RIGHTS TO CONTOUR 985 ON AGUASABON LAKES RESERVED TO HE.P.C. OF ONTARIO. FILE: 132730 FLOODING RIGHTS ON OWL LAKE RESERVED TO H.E.P.C. OF ONTARIO, FILE: 132730, TO 15' ABOVE PRESENT WATER LEVEL. RIVER, BED AND FLATS ON AGUASABON RIVER RESERVED TO 20' ABOVE PRESENT WATER LEVEL SOUTH OF LOC. J.K.309 FOR FLOODING FILE: 10752 VOL. 6 LEGEND HIGHWAY AND ROUTE No OTHER ROADS TRAILS _____ SURVEYED LINES: TOWNSHIPS, BASE LINES, ETC. LOTS, MINING CLAIMS, PARCELS, ETC UNSURVEYED LINES. LOT LINES PARCEL BOUNDARY _____ MINING CLAIMS ETC ____ N RAILWAY AND RIGHT OF WAY ------UTILITY LINES •----•• [-••--••• Q NON PERENNIAL STREAM -----FLOODING OR FLOODING RIGHTS G SUBDIVISION OR COMPOSITE PLAN RESERVATIONS ORIGINAL SHORELINE MARSH OR MUSKEG Ш MINES AK TRAVERSE MONUMENT ___ **DISPOSITION OF CROWN LANDS** \succ NTO TYPE OF DOCUMENT SYMBOL PATENT, SURFACE & MINING RIGHTS 4 SURFACE RIGHTS ONLY. , MINING RIGHTS ONLY S LEASE, SURFACE & MINING RIGHTS SURFACE RIGHTS ONLY , MINING RIGHTS ONLY. LICENCE OF OCCUPATION ORDER-IN-COUNCH RESERVATION CANCELLED SAND & GRAVEL NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY & 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP 380, SEC 63. SUBSEC 1 SCALE: 1 INCH = 40 CHAINS AREA LOWER AGUASABON LAKE M.N.R. ADMINISTRATIVE DISTRICT **TERRACE BAY** MINING DIVISION THUNDER BAY LAND TITLES / REGISTRY DIVISION THUNDER BAY Ministry of Land Y Natural Management 48°52'30" Resources Branch Ontario Data FEBRUARY,1982 Number G-599 48887





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